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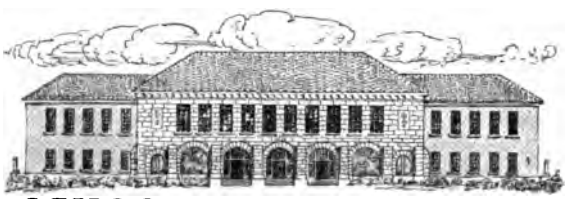

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THE LEARNING PROCESS

OR

Educational Theory Implied in Theory of Knowledge

BY

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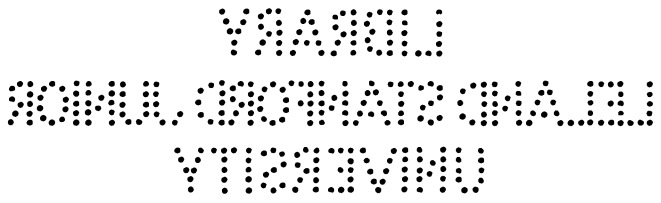

PREFACE

Education as a conscious effort towards human evolution involves the most difficult problems of life. The school, like other institutions, has arisen out of practical needs, at first narrowly conceived, and the idea of its aim and methods has been of gradual development. The meaning of a thing is its relations (p. 44) and naturally the narrow abstract relations involved in immediate ends and rule of thumb methods have been made prominent in educational theory, and often have been perpetuated by tradition long after their usefulness has been outgrown in the progressive discovery of remoter needs involving wider relations. The true meaning of education and consequently its aims and methods will be understood only when its fullest and completest relations to the life process have been discovered. It is the purpose of this essay to discover in the light of epistemology some of these wider relations and in them to find some formal principle or norm that may be of value in selecting from a confusion of educational aims and methods those which are more in harmony with the evolutionary progress.

The discussion in the first eight chapters presupposes on the part of the reader some familiarity with the theories of knowledge concerned. While an attempt has been made to develop the essay as an organic whole, some, who may not be especially interested in the critical discussion in the first eight chapters, may wish to begin with the constructive theory given in chapter nine, while others may wish to read only the educational implications discussed in the tenth chapter. The last chapter contains a brief summary of the whole.

Acknowledgements should be made both for inspiration and guidance to the writer's teachers, including Professors MacVannel, Dewey, Thorndike and McMurry in Columbia University; Professors Hanus, Münsterberg and Royce in Harvard University; and Professor Gordy in Ohio State University. Especial acknowledgement is due Professor MacVannel, under whose supervision this dissertation was written, the beneficent influence of whose personality and teaching cannot be forgotten.

Owing to the nature of the problem, much that is here given must be faulty. Life as a self-differentiating unity ever presents more and more complex relations, so that thought, which must take them into account, can only progressively approximate the truth. Indeed, most of one's activities must be guided by theory, or opinion, which consists of hypotheses in process of becoming facts, and ever subject to modification. It is hoped that what is here given will be suggestive to the reader, and the correction of error, where he can discover it, is left to him. The solution of the educational problem will have to be done over many times, each time more closely approximating the truth and becoming a more definite guide in the most difficult of all activities, the progressive realization of human nature.

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INTRODUCTION

In the growth of the tree of knowledge new branches spring from the old. Educational theory, while it develops in a direction distinctively its own, has its basis in other more fundamental branches of thought. That the theory of knowledge and educational theory are most intimately connected is at once evident. Both are nourished by the problems arising in the study of the knowing process; the one for the purpose of giving some criterion of the validity of the product, or knowledge, the other to reveal a method whereby the process may be controlled in reproducing knowledge. Especially in the early stages of a new development must that which is vital in the older stock be adapted to strengthen the one which is budding. Accordingly, it is the purpose of this essay to consider certain typical theories of knowledge with the hope that some truths may be revealed which will tend to strengthen that movement of thought which is rapidly making the work of the teacher a rationalized endeavor rather than a mere routine.

A theory of knowledge is itself a product of the knowing process and therefore subject to the limitations of thought. Accordingly, it is not immediately given but must involve presuppositions, without which nothing can be known. The consciousness of immediacy arises through a differentiation of experience into subjective and objective phases, which can be separated only as logical abstractions, and, in this differentiation, the objective phase to a degree loses its immediacy and receives meaning only in the light of presuppositions. Therefore, to limit oneself to immediacy is to join the Eastern mystic in abandoning knowledge and seeking annihilation. Schools of philosophy then must begin with unproved assumptions; and, according as these assumptions differ, there result types of theory which vary in important particulars. In order to judge the relative value of various theories, the assumptions on which they are based must be considered. The cause of difference in assumptions is due to abstraction, or viewing one phase of experience out of relation to the others. This is done when one phase is regarded to be

independently real, as in subjective idealism, materialism or pluralism; or when one phase is used to interpret another in aspects in which the two are not analogous, as when mental phenomena are interpreted in the light of space concepts. To comprehend the truth free from all abstraction, to see everything in its relations, is the ultimate goal of knowledge, a goal infinitely removed but gradually being approximated. Often conclusions derived from narrow abstractions are useful for certain limited practical purposes and therefore justifiable, as in the case of the special sciences; but, when in relation to some wider purpose conclusions conflict, those which involve the less abstraction are nearer to the truth. The Ptolemaic astronomy is useful for many ordinary purposes of life; but, for the wider purposes of the astronomer, it must give way to the teachings of Copernicus, which explain it and at the same time give a more comprehensive and valuable account of the facts. The common dualistic view of the world is a satisfactory hypothesis to guide many ordinary activities, but its inadequacy to guide the more comprehensive activities of teaching is no less than that of the old astronomy to predict stellar phenomena. Accordingly, the method to be attempted in this essay in considering typical theories of knowledge is to trace apparent inconsistencies and conflicts to the partial points of view from which theories have been made, and, in doing so, to present a more comprehensive point of view which will explain the narrower ones and at the same time make possible a theory of knowledge which will offer truths of vital importance to the theory of education.

The immediate practical value of the result hoped for should not be misunderstood. The mere knowledge of educational theory will not make a good teacher for the same reason that the mere knowledge of logic will not make a good dialectician; or of ethics, a just man. Because the concrete situations to which they apply, although having some common aspects, are in essential particulars infinitely variable and involve appreciation of worth more than description of fact, normative disciplines consist of generalizations which are regulative rather than creative and should furnish in a concrete situation a general basis for the selection of the best of several courses of action; but, although suggestive, they do not, like the descriptive sciences, independ-

ently tell precisely what must be done in order to realize the desired end (cf. pp. 53-54). While practice without theory is blind, theory without practice is empty.

At best a theory of education is only a general idea, a hypothetical plan of action, which has been abstracted from a long process of experience and which must be further tested, corrected and elaborated through its application to the actual process of teaching. Thus may education repay its debt to the theory of knowledge by testing epistemological principles in the court of action, the final court of appeal in the determination of truth.

CHAPTER I

The Theories of Socrates and Plato

Thought arises from conflict, from unstable adjustment. (cf. pp. 42-43.) In earliest times the conditions that make thought self-centered did not exist. It was turned outward in an attempt to find unity in the unstable manifoldness of nature, and the first attempts of philosophy were to reduce all to one element, whether it be air, fire or water.

As a tribe developed, the most satisfactory forms of activity which it had experienced were preserved by gradual and imperceptible natural selection and embodied in tradition. This tradition was followed naïvely and without question, and thus, in each tribe, so complete a connection between the self and nature existed that the difference between them was unnoticed. Naturally the experiences and consequently the traditions of various tribes differed. When, however, through war and commerce tribes met, conflicting traditions tended to become mutually destructive; and, with the destruction of habitual paths of self-expression, a hiatus yawned between the self and the world; and, in the consequent mal-adjustment, the idea of subject was born into consciousness. From now on, philosophy had two terms with which to deal, nature and self, the world and the individual, the subject and the object, and, from the early problem of harmonizing the unstable manifoldness of nature, it was brought face to face with the infinitely more complex one of harmonizing the self and nature. Thus arose the conditions of the problem of knowledge.

With faith in outward authority weakened and nothing apparent to take its place, an age of skepticism naturally followed. Traditional uniformity gave way to individual caprice. The individual man was held to be the measure of all things; his belief was for him the standard of truth; his pleasure, the standard of right; and, in the consequent self-seeking, justice was the interest of the stronger. Skepticism may be the pre-condition of a better founded faith, but it is not itself creative. Ther[illegible]

the skeptics, to whom the name Sophists is generally applied[1], formulated no positive general theory of knowledge. The method of their educational practice was guided by a narrow empiricism, and, consistent with a belief in the homo-mensura tenet, they were concerned with opinion rather than knowledge, and consequently emphasized rhetorical persuasion rather than logical conviction. A world of individuals whose opinions, regarded as truth, could be externally determined would imply a somewhat mechanical theory of knowledge.

The authority of the world without had been denied for definite reasons; but that of the world within, only through ignorance of it. Therefore, when positive philosophy again arose, its attention was naturally centered on the latter. "Know thyself" was the maxim. With a philosophic faith in some ultimate reconciliation in a world of apparent conflicting individualism, Socrates began the investigation of the ideas of those about him; and, by a process of definition stimulated and refined through argument, he attempted to discover the common essence of concepts. The problem was too great for one man and he confessed his inability to solve it. While in Socrates the theory of knowledge began to germinate, modern students, whose minds have developed in a social medium enriched by more than two thousand years of philosophic thought, are prone to read into the Socratic position more than was ever distinctly differentiated in the mind of the great teacher.

An adequate theory of knowledge must give some reasonable account of the development of concepts. But Socrates did not do this. While the so-called Socratic method, that of questioning, conforms to the method of creating tensions (discussed in chapter nine), Socrates does not seem to have appreciated its vital significance in the development of knowledge. He was interested in the meanings of ideas as products, rather than in the formal process out of which they develop, and, assuming the existence of concepts in the mind and their essential uniformity, in positive doctrine he advanced no farther than his so-called intellectual "midwifery". To bring already formed ideas to light was his mission as he conceived it. As they could be brought to light only in intellectual form, he failed to recognize

[1] Some Sophists may have advanced from the position of skepticism. Cf. Gomperz, *Greek Thinkers*, Vol. I, pp. 451 ff. (Auth. Edition, London, 1901); also, Grote, *Plato and the other Companions of Sokrates*.

their underlying volitional and emotional nature. This is most noticeable in his ethical doctrine that one who knows the right will do it. The theory of knowledge here, at its very beginning, received an intellectualistic turn which has in a large measure affected its further development. The results of this are noticeable in education even at the present time.

The Sophistic and Socratic types of thought were the heritage of Plato and the solution of the problem which arose from practical needs became from now on the special work of the philosopher.

Socrates had directed attention to the mind as the source of true and authoritative concepts. For further investigation two problems naturally arose: (1) to discover the basis of the truth or validity of concepts, (2) to systematize them according to their meaning. Plato attempted to solve both.

The universe of experience is infinitely manifold and the phases of it to which one human mind is strongly attracted are limited; consequently, individual thinkers tend either to be satisfied with the account of a part, neglecting the rest; or else to interpret all in the light of a few phases of it. To understand a philosopher and his relation to thought as a wider social product, one must know his point of view. Plato had a natural interest in mathematics and ethics; and thought previous to him had made prominent two views of the nature of reality: the Eleatics believed it to be static and permanent; the school of Heraclitus viewed it as a ceaseless becoming. The influence of these four phases of thought upon Plato is evident. (a) His interest in mathematics influenced him to look upon ideas as independent of the concrete manifestations of nature. Mathematics deals with the forms, space and time, abstracted from the content of experience. Since the forms are universal, after the abstraction has once been made and mathematics has begun its work of analysis, no further attention to nature is necessary; the mental vision—the eye of the soul or sixth sense as Plato calls it—sees the relations within the abstraction. With an inclination naturally to use this class of ideas in which he was so strongly interested as typical of all ideas, it was easy for him to follow Socrates in placing entire emphasis upon the concept as the fundamental basis of knowledge, although in [illegible] a

concept is an abstraction which marks an advanced stage in the knowing process. (b) Again, because of the universality of space and time, concepts based upon these abstract forms have a peculiar permanence and finality. Accordingly, the natural trend of Plato's mathematical bias led him to the Eleatic position in his doctrine of ideas. (c) Then too since these concepts are independent of any particular mind at any particular moment, it is easy to imagine them to be independent of all mind. With poetic imagery the permanent and static ideas were hypostasized and viewed as reals of which the changing phases of experience were mere copies. Seeing in the latter the Heracleitean principle of change, he turned to the realm of ideas as more worthy of study; for a world in flux did not offer the promise of that definite universal truth which Socrates sought. The universal and particular, which can be separated only through abstraction, Plato here practically sundered, although the statement that particulars are copies of universals seems vaguely to refer to some relationship. As a matter of fact, universal and particular are two aspects of a unitary reality and neither can exist nor have any meaning absolutely sundered from the other. "Perception without conception is blind, conception without perception is empty." Thus in two ways did he become the victim of his mental bent; he viewed all ideas in the light of mathematical concepts and neglected one phase of reality to center his attention on another.

While the practical need which gave rise to Plato's philosophy was primarily a moral one, the purely intellectualistic position which he had inherited from Socrates had no place for genuine ethics. Using the concept "good" in a fancied analogy, which destroyed its ethical sense, he made it serve to relate ideas and phenomena. Things in the phenomenal world of change were "good" to the extent that they gave adequate expression to the reality embodied in the world of ideas. Again, complete thinking involves both abstraction and synthesis or conscious restoration of the abstraction to the unity from which it was taken. Plato, following the tangent of abstraction, attributed deepest reality to the most empty abstractions, arranged his "ideas" in a system with "the good" as supreme, and then considered the highest aim of life to be the passive contempla-

tion of this. Here, indeed, is the irony of a philosophy that takes a partial point of view. When activity inquired for a guide, it was made passive: the search begun for the sake of goodness ended by making it either an empty abstraction or a mere link of relation to a realm considered too unreal for serious study.

Plato was an artist; consequently, it was natural for him to be synthetic rather than analytic in the sense of treating ideas only as they are involved in wider relations rather than probing into the processes out of which they develop. The same tendency that inclined him to order them in a system according to their meaning, influenced him to account for their origin and development by the somewhat poetic doctrine of reminiscence. This doctrine is based only upon an analogy with implications favorable to poetic interpretation. Ultimately any analysis must face the same limit of facts which Plato sought to transcend in the myth. The human mind cannot primarily create: it is limited in its investigations to the description of experience, which cannot be transcended. In this description, however, it can to a greater or less extent trace the process in which knowledge develops. And in this very description is the promise of an answer to the problems of both epistemology and education.

Even with analytic insight, only a very partial answer could have been given by Plato, because his attention was limited to abstract phases of the knowing process. Therefore, he was soon compelled to take recourse to the myth. In fact, in this matter, he made no advance upon the Socratic doctrine of "midwifery". Ideas were born with difficulty, with the assistance of dialectic. Other than this he told nothing of the process through which they got their highly organized blood and sinew and the breath that made them vital. The limited view to which he gave attention—and this was the view of Socrates also—was intellect abstracted from feeling and will. In dialectic, the emotional appreciation of worth and the exercise of will are involved; and, if Socrates and Plato had analyzed this very process, they would have found a cue to the method of knowledge, but they were interested in knowledge as a product, and so failed to discover that their very practice of philosophy reveals the inadequacy of their

intellectualistic position. Indeed, the activity of the philosopher to find amid conflicting traditions the right form of self-expression, itself became a form of self-expression, and, when fixed by habit, was felt under tension to be the worthful thing to do.[1] Activity, which when consciously directed becomes the expression of will, is fundamental in life, and out of this activity in the service of further activity does knowledge develop. The intellectualist makes contemplation the highest good because his view-point has excluded everything else, but even in contemplation has he unconsciously slipped in feeling and will: the highest goal even here is inconceivable apart from activity. Neither the epistemological problem of the validity of knowledge nor the educational problem of the control of knowledge can be solved from the intellectualistic position, for the validity of an idea can be determined only by reference to something else and control takes place only in the direction of a process where certain causes condition certain results. The final answer to these problems from the intellectualistic position, as is clearly evident in later writings, must assume an illogical dualism where validity is made a correspondence between an idea and something else independent of it, and therefore without the pale of consciousness and unknowable; and the method of education by mechanical analogies descriptive of how that which is out of the pale of consciousness builds up in the mind ideas which correspond to it, bridging an imaginary chasm the existence of which could never be known. Even this theory would be impossible without reference to will, for the very mechanical analogies involving force are themselves analogies derived from the ejection of the subjective experience of will into objective phenomena as a means of interpreting them (pp. 47 and 53). Intellectualism views only a product as static, and, after shattering the crystal of knowledge into fragments, it is powerless to get them together again: a test of validity and a method of control demand uniting relations, and relations are fundamentally dynamic, existing in a process.

[1] Cf. p. 44.—To use a psychological analogy, as the world of "external" vibration is revealed in color, sound and other qualitative sensations, so the tensions in our habits are revealed in feelings of worth.

CHAPTER II

The Theory of Aristotle

With Plato's problem, Aristotle inherited his master's point of view. But Aristotle's interest was biological rather than ethico-teleological and mathematical. This naturally led him to a more comprehensive view-point. The demands of biology could not be satisfied with only a formal, static realm of ideas as a working basis, while nature with its rich variety of content was neglected; and, as soon as nature was taken into serious account, a unitary dynamic conception of reality was the result. It was dynamic because nature involves change and growth: it was unitary because both matter and mind are involved in the life process. In Aristotle's thinking, the narrower view-point which he inherited was never brought into complete harmonious relation to the wider one to which his interest led him; and, consequently, the effect of two conflicting principles is very evident in his philosophy. The one principle made him at times an unconscious victim of the Platonic dualism and reached its culmination in his theology, where God is represented to be pure, immovable form, and in his ethics, where contemplation is regarded to be the crowning aim of life: the other made an evolutionary interpretation everywhere prominent. Aristotle's statements which have direct bearing upon the theory of knowledge are fragmentary, and the fact that he was influenced by two conflicting principles makes their interpretation difficult; for inferences drawn in the light of one principle differ from those made in the light of the other. However, his real contribution to thought is included in his conception of reality as a unitary process; and, to appreciate in its purity the advance which he made upon Plato, it is necessary to eliminate the effects of an occasional unconscious influence of the static-dualistic position, against which he openly contended in so masterly a manner.

The biological point of view reveals an organic unitary process of development. This process from the lowest to the highest

manifestations of life presents two fundamental aspects, which Aristotle called "dunamis" and "energeia". The "dunamis" is the basis out of which the life principle rises to a completer realization. The "energeia" is the realizing viewed in its relation to the "dunamis". As the life principle advances in its realization, the "energeia" for the lower stage becomes the "dunamis" for the higher. A possible translation for these terms is situation and agent, at least when applied to higher forms of life. In the life of man, the process is a conscious one. Based upon a present situation (dunamis), a purpose is formed with a view to a better situation: through the activity (energeia) to realize the purpose, new experience is gained: this experience in turn integrates with the old as a situation (dunamis) for new purposes and activities (energeia). Thus does experience ever widen, making possible an increasing number of purposes, while the greater number of purposes lead to activities which bring about a further increase in experience. A little child, comparatively speaking, is merely a "dunamis", a possibility, a situation, out of which through self-activity a gradual development comes. In this process of self-realization, as each individual progresses in experience, he builds throughout his life the world in which he consciously lives.

Of this conscious life process there are two fundamental phases. The essence of purpose is its view to a *better* situation: this involves an appreciation of relative worth, an *evaluation*. The purpose can be realized through activity only in so far as experience is under *control*. Plato, with his ethical bent, was interested in *evaluation;* while Aristotle advanced to the investigation of the complementary phase of the process and sought a *method of control*. Accordingly, while Plato's philosophy culminated in the *classification according to worth of ethical concepts*, Aristotle developed a *system of logic*. Control must be exercised in a world of changing particulars and its task can be accomplished only in so far as this world of particulars is amenable to thought, is rational. The relation of thought to its object at once became a question of fundamental importance and here Aristotle took issue with the Platonic dualism. In developing the syllogism, he pointed out the unitary logical process, which involves both the particular and the general, a process by

which advancing control is gained over experience, whether it be through the unconscious forming and use of simpler concepts, the uncritical reasoning of every-day life or the application of the more refined methods of exact science. In analyzing this process, he gave attention chiefly to the deductive phase, tracing premises back to the categories and showing how the individual is subsumed under the general. Turning from Plato's doctrine of reminiscence, he held that, by a process the potentiality of which is innate, these premises, or *principia*, develop out of particular judgments of sense, remembered, compared, and through resemblances unified; but he did not further analyze the method of induction, a problem which was left unsolved until the Baconian movement.

That to Aristotle the knowing process was regarded as unitary is evident not only as a logical conclusion from his presuppositions, but also because in his analysis he has revealed both subjective and objective phases throughout it. He held that there can be interaction only where there is something in common and this precludes dualism: for two "things" are the same in respect to what they have in common; and, however they may differ in other respects, these differences must be organic with the common element, else a repeated dualism would break out in both and destroy them. The world cannot be abstracted without including, in a measure, reason: reason cannot be abstracted without, in a measure, including the world. It is true that Aristotle points now to sense and now to intellect as the origin of knowledge, but either the greatest of logicians must be accused of the most apparent inconsistency or his statements must be interpreted to give only greater relative emphasis to one phase or the other. There is little probability that the Platonic position influenced him in the analysis of ordinary everyday experience, for the very purpose in making the analysis was to bridge the chasm which his master had made between ideas and the phenomenal world; in a word, to show that the universal exists in the thing. The common element in subject and object, that which unifies them is, according to Aristotle, the form, the universal. In the process of knowledge in [illegible] hending the forms of things, reason finds itself in th[illegible] Reason is potentially in the world; the world is poten[illegible]

reason. In the realization of its potentiality, reason presents two aspects which Aristotle calls creative and passive, and which, in mental evolution, seem to correspond to the "dunamis" and "energeia" of the wider process of development of which reason and the world are but phases.

The problems implied in Aristotle's newly discovered conception of unitary development are infinite both in number and complexity. In consequence, he suffered the limitations of a pioneer: it was impossible for one man or one age to cover the whole field. However much social considerations affected his solution of other problems, in the theory of knowledge it has remained for later generations to account for the logical norms or habits as a social product and to show that reason *finds* itself in the world because in social progress it has been vicariously *put* there; for each generation has helped to build the world in which future generations are to live. The world is rational because the world is built out of judgments. Aside from the sense symbol, a thing (e. g. a chair) which one seems to see directly is a product of judgments formed in previous experience and ejected into the symbol; indeed, even the symbol itself is not differentiated independently of the judgment. Thus every new judgment, naïve or critical, to which one becomes habituated is built into his world: the proved theories of one generation become mental habits and consequently parts of the world of the next. Thus every hypothesis proved by science is a step in the creation of things. With a knowledge of physical and chemical theory, for instance, one *puts* into the world and then seems to see immediately that which another, ignorant of these sciences, cannot see. The idea is not only in the thing: it is the thing. Logical norms are the essential forms of this creative process having become conscious of themselves, their development and habituation being a social product in accordance with the principles under which any advanced experience is socially developed.

The Platonic conception of reality influenced him especially when, in an attempt to transcend human experience, he imagined the process as a completed whole. The line of progress, as completed, naturally appeared to be static and presented terminal aspects easily amenable to abstraction. Thus, at one

terminal, there appeared to be pure matter without form; and, at the other, pure form without matter. In relation to thought, the most prominent aspect of which is formal, matter seemed to have a recalcitrant element; while, as pure form, God appeared to be static. These speculations, at first transcending human experience, in turn exerted an influence within it. Thus Aristotle's conception of God had a tendency to make his theory of knowledge intellectualistic rather than voluntaristic; for it introduced an inconsistent static principle into his ethics, where undue emphasis was given to the ethical value of contemplation: his conception of pure matter constantly threatened his doctrine of knowledge with an inconsistent dualism; for abstracted matter seemed to be irrational and liable to chance.

When reality is viewed as an evolutionary process, as a self-differentiating unity, all progress in the understanding of it must be made by separating the various phases through abstraction and then viewing them together in their unitary relation—in other words, in analysis and synthesis. Dualism is the result of incomplete thinking. Within a unitary experience a separation has been made. Thought has done its perfect work only when the abstracted phases have been consciously restored to the unitary experience; when, in a word, their essential relationship has been discovered. Plato had separated ideas on the one hand and the phenomena of nature on the other. Aristotle advanced towards the completion of his master's thought by forming a synthesis of these abstractions through a more or less definite discovery of the relation between idea and concrete object, concept and percept, universal and particular. The knowledge of this relation becomes more definite only as reason advances in its infinite work of making ever more refined differentiations and integrations. Thus did Aristotle, by discovering a wider point of view in relation to which the narrower ones could be unified, give to thought a vantage ground in the solution of its problems. This wider view-point makes it possible to unify the valuable contributions which individual thinkers have added to the social stream of thought; and, in consequence, it furnishes a norm by which these contributions may be judged.

CHAPTER III

The Theory of Mediaeval Writers

After Aristotle there was no important advance in the theory of knowledge for two thousand years. A current of religious and mystical thought from the East intermingled with Greek philosophy and gave to it a theological turn, which, however valuable it may have been for the world in other ways, did not present the problem of knowledge in a form to advance to any great extent its solution. In the early centuries of the Christian era, the religious phase of thought began to dominate to such an extent that the Roman Catholic Church developed as the institution for its expression. The dogmas of the church were presented as the truth. This was necessary, for the conquering hordes which swept over Europe were not prepared to understand the advanced conceptions of an older civilization. Thought must stop its absolute advance until the new civilization caught up with it. But when the new civilization had lived through the types of experience conserved for it in the church and was ready to advance, the institution which had found its justification in the conservation of thought, now tended to suppress the thinker. Thought lives in the solving of its problems, the comprehension of its doubts. The traditional relation of church and individual, no longer justifiable, was not easily dissolved; and, when the church gave dogmatic solutions for problems and an implicit faith in its infallibility dispelled doubts, there was no occasion for thinking.

But this situation could not long endure. Nature's creed is not "Believe or be condemned", but "Act rightly or be condemned", and to determine how to act requires thinking. Now that the new civilization had overtaken the old, problems within the teaching of the church inevitably arose. To strengthen the dogma, belief made an alliance with reason, an act which sealed the doom of an institution that, as a dogmatic teacher, had, so far as the thinking world is concerned, fulfilled its mission. The old problem of the relation of the universal to the particular

now took the forms of realism and nominalism. Since the church claimed to be a reality greater than individuals and the doctrines of the Trinity and original sin involved a similar conception, an appeal was made to Plato's thesis that the real is the universal. The Platonic conception *universalia ante rem* prevailed in the twelfth century and was taken up into the Aristotelian *universalia in re* in the thirteenth: but the pendulum did not stop here, and, in the following two centuries, the particular was viewed as the only real for knowledge, for *universalia post rem* and nominalism prevailed. Since the objects of faith were universal, nominalism divorced faith and knowledge. Further development must then come from reason independent of faith—a fact which destroyed the basis of scholasticism. As a last resort the church made an appeal to force, the final evidence that its authoritative mission as infallible dispenser of truth was at an end. Man is greater than institutions.

An external influence also came to hasten its dissolution. Greek philosophy preserved in the East and free from the Procrustean bed of religious dogma was introduced into the western world through the Crusades and the flight of scholars at the fall of Constantinople, while the newly invented printing press made its wide dissemination possible. Then, too, a new astronomy and a new continent stimulated interest in nature. The story of the Grecian movement of thought was now repeated in that conflicting traditions became mutually destructive, an age of skepticism arose and an appeal was made to reason as arbiter.

At this point, Descartes began the problem. The phases of rationalism and empiricism were differentiated in Leibniz and Locke, integrated in the Kantian movement, given a functional turn under the influence of modern biological conceptions and are being socially interpreted by thinkers of the present.

CHAPTER IV

The Theory of Descartes

An age of conflicting tradition naturally leads to an age of skepticism. When skepticism has removed the authority of the outer world, thought must seek a new foundation in the inner. The world had completed a cycle of thought from Socrates to Descartes; and, generally speaking, similar conditions led both to begin anew with a rationalistic philosophy. But no thinker is independent of his past. He is educated in a social medium which is a product of the past and unconsciously grows into habits of thought, ways of looking at things, from which he cannot escape because they constitute his very mental equipment. So, when Descartes attempted to ignore the past and begin philosophy anew, he was still limited by traditional conceptions. Both his problem and its solution were in a great measure influenced by the beliefs of the church of the Middle Ages, which through force of tradition formed a vital part of his environment. In religious teaching, the distinction between soul and body, the mind and nature, had been sharply drawn: the soul was immortal, the body perishable; the spirit was divine, the world evil. Descartes began with the dualistic conception of reality in a most acute form: mind and matter in themselves were defined as two substances so essentially different as logically to preclude any analyzable common basis upon which an interaction could be explained. His rationalistic view-point led him to begin with mind. His problem was to find a means through which matter also could be comprehended.

With a strong mathematical interest, Descartes assumed as a criterion of truth the certainty which attaches to mathematical axioms. This certainty he claimed to find in the judgment, "I think, therefore I exist", which forms the starting point of his argument. But even here an assumption has crept in, for the two pronouns are not the same in meaning, the one being the real and the other the logical subject, or the real subject objectified. Mathematics deals with relations in the objective

phase of experience: Descartes' proposition transforms the subjective into the objective. Thought proceeds by a process of hypothesis and proof. The teaching of the church now supplied him with the hypothesis that God mediates between mind and matter. This inference is valueless so far as positive knowledge is concerned, for the finite mind cannot understand *how* God performs such mediation and it is the understanding of the method, the "how," that increases control of experience. While mankind cannot understand the ultimate constitution of the universe, yet many problems can be solved in ways which do increase such control. To refer the difficulties of a problem to a Supreme Being is to preclude other hypotheses practically valuable which may be capable of demonstration. Had Descartes not been satisfied with his hypothesis, it would have been a mental necessity for him to have investigated the assumptions which led to the problem and this investigation might have brought him nearer to the truth. But he believed that his solution could be demonstrated. Here again he was under religious influence; for when inference involves the close personal relation of religious conviction, one may be blind to flaws in the proof. Assuming that there are innate ideas existing in a way independently of an external reality to which they refer, he attempted to complicate these ideas so as to prove the existence of the external reality. In one argument, he assumed that the idea of causation involves the independent existence of such a law and also that there is a positive innate idea of a Perfect Being: from these assumptions it follows that there must be a being as great as the idea to have caused it. In the other argument, he asserted that the idea of a Perfect Being requires His existence, because existence is one of the *qualities* of perfection. A Perfect Being would not deceive: therefore, the material world corresponds to man's idea of it, providing he accepts only that which is clear and distinct: otherwise he himself is responsible for error.

The fundamental fallacy of Descartes' thinking is the assumption that by complicating universal ideas he can reach the particular of experience. The cycle of universal ideas can never lead beyond itself, for it is essentially an abstract view of experience which neglects the particular. But a deeper fallacy lies in

the very statement of his problem. There is no realm of ideas, there is no mind, wholly apart from the world of extension, and there is no world of extension wholly apart from mind, so far as human beings are concerned. To say "I think" without saying "I think something" is meaningless. Both the mind and the realm of ideas of which Descartes speaks are empty abstractions and his problem has no significance. As did Socrates and Plato, he took a partial point of view, but dealt with abstractions that had been more sharply defined by centuries of acute thinking. He has abstracted the mature individual from society and the intellect from the other phases of the individual mind. There can be no rational theory of knowledge consistent with his doctrine. Thought lives upon its own problems and the chief value of Descartes' philosophy is that it gave to subsequent thinking the basis for a most vigorous life.

CHAPTER V

The Theory of Locke

Now that Descartes had so clearly sundered the self and the world, it was possible to look upon either the external world or mind as the primary basis of knowledge. Of these opposing views, the philosophies of Locke and Leibniz may be regarded as typical. A simple way to deal with the problem was to assume the dualism which Descartes had made, disregard its metaphysical difficulties, and, in an empirical way, trace the process of knowing. This was the task undertaken by Locke. With the world to be known and the knower considered to be separate realities, the problem was to discover how the knowledge of the world gets into the mind. Locke, accordingly, regarded the mind to be a blank tablet and held that nothing can be in the intellect which did not come through the senses. According to this view, the external world affects the mind through the senses and the mind thus affected becomes aware not only of the world but also of its own states, all knowledge thus arising from sensation and reflection. The external world, however, is not in this way directly presented as it actually exists, for essentially it is extension and motion, which sensation presents to the mind in an enriched form. As Helmholz says: "We should be grateful to our senses for conjuring up colors and sounds out of vibrations, and for bringing us in sensations, as in a symbolic language, news of the external world". Knowledge, then, begins with simple ideas which come through a single sense, as sounds and colors; through the combined product of two or more senses, as ideas of extension and motion; through reflection, as those of feeling and will; and through reflection and sensation together, as those of succession and power. Out of this material, complex ideas are formed referring to temporal, spacial and mental modifications or *modes*, to *substance* and *relations*.

Locke's point of view is that of naïve realism. Like the viewpoint of the Ptolemaic astronomy, it is fixed by habit upon people in general and is apparently a practical working basis for

every-day purposes. Unfortunately, it is more firmly fixed than the old astronomy, because there is no uniform teaching of thoughtful men to oppose it. Therefore it is regarded as the view of common sense. But the theory does not adequately explain the facts. A true explanation of a process may be refined without limit, but a false one is soon blocked; for, when a process is properly viewed, ever finer differentiations may be directly seen within experience, but when it is falsely viewed, that which is not seen must be built up constructively out of inadequate material, judged to be analogous and got elsewhere in experience. In three most fundamental parts of his doctrine, Locke has no experience, either direct or constructed, to support him. Further analysis is hopeless because the illusion fails so completely that there is nothing to analyze. First, if the world is completely sundered from the mind, how does it ever become known? Locke refers this difficulty to the wisdom of a Divine Being. Second, how do a multiplicity of sensations received from without become related and organized into the intelligible world which the mind does know? With naïve inconsistency he assumes mental self-activity to account for this, but self-activity is an empty abstraction which explains nothing. Third, how does a material world acting upon a *tabula rasa* ever give rise to those known subjective phases of mind—emotions and attitudes —which may be included in the word personality? Locke does not seem to appreciate the real significance of this problem. Locke is right when he says that all knowledge arises out of experience, but wrong in his theory of the nature of that experience; and these difficulties arise from the fact that he deals with two abstractions from a wider process of experience as though they were independent realities. One is a highly differentiated abstract phase of human experience—i. e. the material world—which he imagines to act upon a meaningless abstraction—i. e. an empty mind—through the medium of the senses. Indeed, he deserts experience at the outset. An independent material world of which ideas are copies is an unnecessary assumption wholly impossible to prove, for all the mind knows is its ideas. Furthermore the known world is not composed of things known separately and then unified. They could never have been known as separate objects if they had not first been known in

unity, for the meaning of a thing grows out of its relations: a thing is indeed a *focus point* for a number of relations. The association of ideas in thinking, which is too often viewed as mechanical, is possible just because the meaning of one thing does include the meaning of another. A conscious unitary relationship is the precondition of all thinking and through thought is the world of things built up. Locke can appear to derive relations from things, the general from the particular, because in thought the particular has been developed out of the general and means it plus certain differentiations. Accordingly, what he assumed to be the primary elements of knowledge appear to be in fact its final product: he has made an attempt to work the problem of knowledge backwards. Again, an empty mind is nothing, but Locke imagines it to be a sort of magic receptacle in which can be found, when needed, modes of feeling and will and relations, which his basal assumptions fail to provide. It would be absurd to attempt to explain an oak tree on the basis of a soil, of leaves and of the empty space which the tree is to fill and refer the difficulties of the problem to the wisdom of God and the self-activity of the tree: it is equally absurd to attempt to explain knowledge from the Lockean basal assumptions.

CHAPTER VI

The Theory of Leibniz

The nature of relations, which Locke seemed so little to appreciate and the neglect of which resulted in fundamental inconsistencies in his doctrine, had a determining influence upon the theory of Leibniz. The substances of Descartes, one of which Locke assumed to be the primary basis of knowledge, were quantitative abstractions—thought and extension. Leibniz, with his genius for mathematics, saw that Descartes' view of material substance presented insuperable difficulties to any attempt to determine the relations of parts to the whole. Infinite divisibility and a continuum are inconsistent concepts; for, when an ultimate indivisible point is reached, it ceases to be real: furthermore, a part is not a part, except in relation to a whole, and a whole is not a whole, except in relation to its parts, while in mere extension there are no intrinsic relations. Furthermore, mere extension is inert, while activity is everywhere evident in the world. To avoid these difficulties, Leibniz represented the world, not as a static continuum essentially quantitative, but as made up of an infinite number of dynamic units qualitatively different, each of which included the world in a representative way. Since these units or monads are essentially qualitative, each is simple or indivisible and completely isolated. To sustain its relation to the whole, each is potentially able to ideally represent the whole: if it actually contained the whole, there could be no distinction between whole and parts. Each, furthermore, must represent the whole from its own point of view, which must differ from that of every other monad, else those having the same view-point would be identical. Since there is change in the whole, the monads, to keep pace with it, must be dynamic, have appetition. From the lowest matter to the highest intelligence, each monad mirrors the universe about it, and all are kept in accord because of a harmony divinely pre-established. In lower forms this mirroring is unconscious perception; in higher forms it becomes conscious and is called apper-

ception; when self-consciousness and reason are attained, the monads become "rational souls" or "spirits." As with Descartes, clearness and distinctness mark the perfection of ideas. At first there is a confused mass of perceptions, which, as the monad evolves within itself, become clarified. Matter is confused perception. The human mind is a monad with great advantages for the forming of clear and distinct ideas, because of the peculiar organization of other monads with it to form a body.

The theory of Leibniz may be satisfactory in the realm of mathematics; but, in a most fundamental way, it is at fault. If each monad is completely sundered from all the rest and evolves its perceptions from within, how can it know whether other monads exist or not? To assume that the human mind is a monad leads logically only to solipsism. Leibniz has made unprovable assumptions to serve his mathematical interests and then, when insurmountable difficulties arose elsewhere in his system, found satisfaction after the manner of Descartes in referring them to an All-powerful Being.

The partial point of view which Leibniz has taken in his monadology is the individual abstracted from society; the mind, from the world; and the intellect, from feeling and will. The first abstraction may be traced to that strong individualistic trend of thought which found its educational expression in the writings of Rousseau; the second distinction was prominent in the religious doctrine of the time; and the third is the point of view of mathematics, in which Leibniz was strongly interested. The underlying idea of development, of self-differentiation, when applied to experience as a whole rather than to abstract phases of it, and, accordingly, with the assumption of a social plasm rather than an isolated monad as the basis of development, has later proved to be very fruitful in its results.

CHAPTER VII

The Theory of Kant

Thought lives upon problems arising in the reconciling of apparent differences. To bring together the opposed views presented by Locke and Leibniz now became the task of Kant. His problem, accordingly, was to determine what is contributed by the subject, what by the object, and how these contributions are interrelated. In an analysis of perception, he shows that the particular matter of sense, the manifold variable, is contributed by the object, while the subject contributes the universal forms of space and time under which it is known. These forms are subjective because that which is external presupposes space as the possibility of its existence, while sensations coming one after another presuppose time. Mathematics, which is a science of necessary and universal validity, is based upon space and time and therefore they too must transcend particular experiences. When these forms are abstracted, whatever remains in perception is the matter of sense, which is never known in its purity apart from form. Analogous to the transcendental ego, which is felt to be at the basis of subjective manifestations of mind, Kant infers that the matter of sense has a transcendental basis in a so-called thing-in-itself. In an analysis of the understanding, the forms of logical judgment are examined and the pure formal notions, the categories, are deduced by abstracting from the concepts made by these judgments whatever is contributed by perception. Thus are found twelve categories, by a combination of which all other a priori intelligible forms are produced. The sense and understanding, perception and conception, are related by space and especially time, which form an integral part of the perception and also have the nature of the categories. For instance, time and space are involved in the categories of relation. After the Critique of the Theoretical Reason has thus analyzed pure reason, the Critiques of the Practical Reason and Judgment relate reason to will and feeling by showing it to contain the principles of conduct and of the emotion of pleasure

and pain. Kant then is concerned with one phase of the old problem of the universal and particular. He has dissected them apart cleanly with the skill of a master hand, but the great difficulty in the problem of knowledge is to get them together again. Kant does not show how this is done, but merely assumes that in the awakening of thought the particular matter takes the initiative.

The difficulties in Kant's doctrine grow out of its presuppositions. In an attempt to discover their respective contributions to knowledge, he regards the subject and object as disparate and attributes to one the universal and to the other the particular in knowledge. Just as the ego is regarded as the basis of the universal, he is led by the principle of analogy to posit a thing-in-itself as the essential basis of the particular or matter of sense, an assumption which can never be proved and which therefore has no legitimate place in a theory of knowledge.

While the Kantian analysis has revealed full well the interrelations among the forms of thought, it has not revealed the most essential nature of the bridges across the chasms between the ego and forms, between the thing-in-itself and matter of sense and between form and matter. To do so is impossible, because the ego and thing-in-itself are held to be transcendental and therefore not objects of thought, while form and matter have been assumed to be disparate in the conditions of the problem, so that there is provided no wider unity including both, in such a way as to reveal the basis of relation. To state that the ego is the basis of form, the thing-in-itself the basis of matter and that the thing combines in a unitary way both form and matter, is to point to the fact that there must be a connection, but not to make directly evident its nature. The connection is most essentially a dynamic one and consequently not directly revealed in a static cross section of experience, but in the differentiation of these apparently contrasting phases of experience out of a unitary active process. Then, too, in the Kantian theory, the object starts the process in the development of knowledge. It awakens the subject to use the categories. But subject and object are characteristic of a well-developed knowledge and prior to knowledge they do not exist. A non-existent object cannot act upon a non-existent subject and therefore

knowledge cannot be accounted for in this way. This is the fundamental difficulty in any intellectualistic theory of knowledge. The very experience whose origin is to be accounted for is assumed to begin with. Before subject and object exist, there is activity out of which they differentiate, and in this very differentiation does knowledge develop. Each stage of differentiation is a situation or basis from which a new ideal is projected, and, in the active realization of this new ideal, is there further differentiation, i. e. new knowledge developed. The essential activity is not between subject and object, even where these exist in consciousness, but between a present situation, of which subject and object are terminal aspects, and a projected ideal situation. Accordingly, to analyze the relation of subject and object is not to analyze the essential dynamic process in which knowledge is developed.

Kant's point of view is that of the mature individual abstracted from society and the intellect abstracted from feeling and will: he gives a mechanical analysis of knowledge as a product rather than an account of the process through which it developed. The unity between knower and known, subject and object, in a unity in the development process and to neglect this fact is to be involved at once in an insoluble dualism.

CHAPTER VIII

The Theory of Descriptive Science

The Cartesian dualism of mind and matter is at the basis of the descriptive sciences, the purpose of which is to analyze objective experience into its elements and to determine the causal value of these elements so that they may be used in the control of the future. Descriptive science, accordingly, deals with abstractions, and therefore can be justified only to the extent that it realizes its purpose by being of practical value in the control of experience.

The descriptive science of mind may be designated as psychology, but this word varies in meaning. *In the widest sense it includes any study of mind* and thus to the idealist may mean his philosophy. *It is here used, however, to designate rather a special science which aims at exactitude in dealing with mental phenomena regarded as facts to be described and measured, and to be explained according to efficient causation.* This distinction must be continually kept in mind in the following discussion. Psychology then as a special science must objectify, analyze and measure. At the outset, two difficulties which do not exist for the physical sciences are met with by those who uphold this view. (1) The subjective aspect of experience, the will attitudes, cannot be objectified, because its essential nature is subjective. Any attempt to make the will an object reveals it still to be a subject taking attitudes towards an inadequate idea of itself. (2) Mental phenomena, as opposed to physical, to make a practical distinction, is the term given to those phases of experience which cannot be shared in common by all persons, but are only for an individual, and cannot be regarded as a basis of causation, which is inconceivable apart from matter and motion. To surmount these difficulties, psychology must substitute for the real person the psychophysical organism. Then mental phenomena, regarded as facts to be described and explained rather than meanings to be understood, are supposed to be in the head and to parallel certain

molecular changes in the brain. Thus can a person be treated as an object, while the brain and nervous system, together with their interaction with the rest of the organism, give a common basis for the description, causal explanation and measurement of mental facts. While physical science, aiming to analyze objects into elements and determine their causal values, presupposes an atomism in which all atoms are alike because quantitative, psychology seems logically to presuppose, as paralleling physical changes in the organism, a psychic atomism in which the atoms are all different because qualitative.

Though psychology, justified by the usefulness of its results, regards the mind as being in the head, in reality the head and external world are in the mind, if the word mind is used synonymously with experience. The word external does not mean external to mind: it has reference only to relations of things within the mind, which may be external to one another. To ask the location of mind is a question without meaning, for the mind is not any*where:* the spacial relations are within its knowledge, but the mind itself is not spacial. The difference between a fact and an idea is not that one is an external reality and the other an internal copy of it. An idea is an hypothesis which, when verified by being found to be a satisfactory guide for conduct, becomes a fact: there is no dualism between the two. Matter is a permanent possibility of experience. The history of world building is the history of ideas becoming facts. What to one generation seems to be sufficiently verified to be regarded as a fact, may, in the light of the further experience of the next, prove itself to be only an idea. A mere idea or hypothesis is individual because of the possibility of infinite variation: a fact is social because verification has limited its variation and thus made it, when abstracted from will attitudes, one truth for many knowers. Science finds it advantageous for the sake of distinctness to deal with terminal aspects of a process as though they were independent realities and to regard them under the analogy of space concepts: accordingly, psychology looks upon the idea as a reality within the mind imagined to be in an individual organism, and upon facts as realities without the mind and existing whether they are known or not. The only account which psychology can give of the development of knowledge is

to trace in a mechanical way how representative ideas are brought about in the head of the organism. A stimulus from the external world affects the sense organ and is carried to the brain by the afferent nerves, there certain molecular brain changes are accompanied by sensation, a reaction takes place through the medium of the efferent nerves and the brain matter is further disturbed. Upon such a basis does psychology account for the origin and development of knowledge, from the simplest sensation to the most complex idea. Since it regards only efficient causal values, psychology naturally views knowledge as a mechanical construct. In the complete knowing process, ethical values as well as efficient causal values are involved. Psychology therefore may analyze, describe, explain and measure mental phenomena at various stages, but it cannot give the truest genetic account of the development of knowledge, since the truest genetic account must take into consideration ethical factors to which the limited purpose of psychology makes it blind. The expression "purpose of psychology" itself points to the ethical factor in the development of knowledge which gives meaning to the very science that denies it. The development of knowledge is in the growth of meanings, and meanings have their subjective as well as their objective reference: they are meanings for somebody as well as objective relations. The meaning is not complete without its worth to be appreciated as well as its causal value to be measured. Therefore, the subjective will and emotions as factors of meaning cannot be neglected in accounting for knowledge: and, as these are manifested only in the active life of a real person, the knowledge process must be studied as a phase of the life process of a person, not of a fictitious psycho-physical organism. Indeed, a meaning, or idea, objectified as a fact for scientific dissection differs as much from the real essence of the meaning as a psycho-physical organism differs from a real person, and for the same reason. The psychological account of the development of knowledge is justifiable for the sake of certain practical purposes, but it does not take so wide a point of view as epistemology, and, consequently, when conclusions conflict, those of epistemology are to be given the preference. However, the wider view does not destroy the narrower one, but, on the contrary, includes it in such a way as

to reveal it in wider relations, which, when understood, give its conclusions a deeper significance and harmonize them with the deeper truth. Epistemology does not refute psychology, but, by revealing its purposes and limitations, includes it; and, accordingly, in the solution of epistemological problems, may use psychological conclusions thus known in a truer light.[1] The value of psychology in the control of the knowing process is not to directly reveal the elements of control and their values, so much as to afford certain practical tests of the values of other processes of control. The teacher has an ethical rather than a scientific attitude toward the pupil. The pupil is not regarded as a psycho-physical organism and his ideas as objective facts. Both teacher and pupil in the teaching process (cf. pp. 55–57) must be absorbed in the appreciation of purposes and the meaning of elements of control within the study. Not the ideas as facts, but the meaning of the ideas are the important elements of control here. The problems in the school are how to differentiate the pupil's experience through the interrelation of meanings in the subject matter studied. A consciousness of psychology is no more useful in teaching a problem in geometry than a consciousness of the anatomy and physiology of the legs is useful in teaching a child to walk: desires and mathematical relations are the conscious elements of control in the one case, and desires and sensations in the other. A descriptive science in its great complexity centers attention upon its own elements as means of control: a normative science, as that of education must be, points beyond itself, offering a simple principle for the selection of other elements of control. This distinction, it must be remembered, is not absolute, but one of degree. Psychology, as it is interpreted in the present chapter, furthermore, assumes to begin with as a basis of explanation that which it is the province of the theory of knowledge to explain, and seeks to further differentiate this by experimental analysis: it assumes a psycho-physical organism and disregards as foreign to its purpose the reconciliation of the illogical dualism between mind and matter. Unfortunately, the application of this psychological dualism to educational theory without discrimination of its peculiar province and limitations as the basis of a descriptive

[1] With this justification, some psychological conclusions are made use of in the tenth chapter of this essay.

science, justified only by the practical needs which it serves, has emphasized a mechanical theory of knowledge which makes prominent the giving of information, the getting of facts through the "windows of the soul" into the memory rather than the logical building of a world. This to some extent has been mitigated unconsciously by an inconsistent mixture of normative disciplines with psychology and through its application by teachers who are not wholly given over to the scientific abstraction, but the scientific dualism is still widely used as a basis of educational theory.

CHAPTER IX

Modern Voluntaristic Monistic Theory

The development of modern theory corresponds to that of the Greek not only in that it began with rationalism following a period of skepticism; but also in that, under the influence of biology, it has come to have much in common with the later development of Greek thought as embodied in the writings of Aristotle. Naturally, it has made an advance both in the refinement of problems and in the extent of the field studied. An individual in the stream of thought finds it practically impossible to get a comprehensive view of the whole contemporary movement and to appreciate the many currents and countercurrents beyond the particular eddy which is encircling him. The discussion in this chapter, accordingly, is merely an attempt to give expression to some modern tendencies of thought which appear to deal with the problem of knowledge in a way that promises to be most satisfactory and which may offer something of value to educational theory. The theory of knowledge is a product of knowledge and consequently a construct of judgments based upon observed data. It is necessary first to see clearly the data, to get a right point of view. The data themselves in turn are the product of knowledge, of judgments made so habitually that they have become unconscious: accordingly, what seems to be a fact immediately given is, in truth, a complex mental construct. To make over old conceptions into truer ones, judgments naïvely formed and fixed by habit must be brought again to consciousness and tested in the light of later judgments. One fact gets its meaning in the light of all the rest: its meaning is its true relation to the whole. Consequently, when a theory of knowledge is made from a point of view which neglects some of the facts, the conclusions, as in most typical cases already considered in this essay, are open to criticism. A point of view which includes all the facts must take in experience as a whole: if there is anything which does not lie within experience, it is not known and cannot be a factor in the theory of knowledge.

Experience, as known in its widest form, is individual. The experience of other persons must always find its interpretation in terms of the self. To read or eject this interpretation into another person regarded objectively as being within a physical body, is to make him one of the many objects of knowledge for the self: the world then appears to be duplicated and truth to be the correspondence between this experience which is read into him and the world in which he appears to be only one of the objects. Only a little reflection is necessary to reveal the fact that the mind is not, in reality, within the human body, but that the human body, as well as other objects of experience, is within the mind. The duplicating of one's own experience in considering it both within and without another individual, or even one's self regarded objectively, is the fundamental fallacy of dualistic theories of knowledge. This dualism can occur only among objects of knowledge and therefore is a partial view because it neglects the individuality that unifies them. Unity or individuality is one phase of all experience just as truly as diversity or plurality is another. The idea of diversity or plurality could never occur unless it were experienced in a unity, for diversity or plurality is a relation and there can be no relation where there is no unity. If things are not unified, they cannot be separate. Without individuality to unify it, the world vanishes into meaningless unrelated atoms just as truly as individuality without a diversity to give it character becomes an empty abstraction. The self can use individual experience to interpret that of others, and, in turn, the interpretation of other's experience may throw light upon one's own, but no satisfactory account of knowledge can be obtained by ejecting one's experience both within and without another individual and attempting to find a direct causal relation between these ejects.

Although the widest point of view is individual experience, this individual experience is also social. I am in others and others are in me. This is a necessary interpretation of experience, the only alternatives of which lead to pluralism, which has been found to be illogical, and to solipsism, in which no one can believe. Therefore, while the widest experience is individual, it contains within itself society, which can in turn be made a

basis to explain how the individual experience came to be what it is. Thus does individual experience reveal itself to be the product of social realization. And, since society is interpreted by ejecting within objects in individual consciousness the experience which is first felt to be individual, nothing can be known as characteristic of society which is not first received as an individual experience: society is a construct out of individual experience as a necessary interpretation of itself. Therefore, the problem of knowledge in its primary form is a problem to be solved within experience considered as individual, for it must first be determined how I know in order to understand how anybody else knows.

Since nothing without experience can be used to explain it, the growth of knowledge is in the evolution of experience and all that can be known regarding it is the process by which this evolution takes place, the internal law of its development. Even the question of the validity of knowledge involves no idea of " copy " or " correspondence " to some independent reality, but can be answered only in relation to this internal development. To present the problem in its simplest form, an account should be given of the beginning of knowledge in any individual. The conditions underlying the beginning of his conscious experience are not directly known by an individual, of course, because they precede whatever he knows. An account of these conditions, therefore, can be based only upon implications in the analysis of mature experience where the explanation of the conscious life of others gives ground for the explanation of that of the self.

An interpretation of others makes it appear that at first there is activity which is not consciously directed; movements are made at random. In this way by repetition certain movement complexes become habitual, especially those which give expression to instincts. There is no direct consciousness of movements which are completely controlled by habit; but, when habitual co-ordinations are interfered with, consciousness is born. Out of this consciousness, as it develops in connection with activity, all the various phases of mental life appear to be differentiated, from the simplest to the most complex. An apple is placed before a child. The instinctive act fixed by habit, in such a

situation, is for the child to reach for the apple. If the activity, which is a very complex one involving eye and other co-ordinations together with those of the arm and hand, is impeded or unsuccessful, there arises in the child's consciousness sensation together with desire, and these are accompanied by random movements that may through indirection, through some "means" get satisfaction. Crying is perhaps the first means experienced. Out of a great multiplicity and variety of such experiences is differentiated the consciousness of means for satisfying desires. Out of this arise problems of control, and thought with its logical method of dealing with experience in solving them. Thought is essentially the trying of actions in imagination in order to discover which is best adapted to realize a conscious desire. An advantage which thought has over random activity in finding the more satisfactory adjustment, aside from imaginary action, comparatively speaking, being practically immune from consequences, is due to the fact that, by dealing with abstract phases of situations, only essential features may be attended to: this, at once, makes it possible to eliminate countless useless reactions, and, because the abstract feature is common to many familiar situations, if essential, it suggests valuable tried elements of activities from which a selection can be made. Thought is developed in the activities of life through the process of realizing purposes, and derives its whole significance from the fact that it is an intermediary stage between obstructed or conflicting habits and successful harmonious action. In this connection, it is worthy to note that many of the terms which mean thoughtful, such as crafty, cunning, clever, wise as a serpent, etc., have in them the idea of indirection, of getting around impediments which stand in the way of direct or habitual activity. Out of impeded activity apparently, then, in the process of making over old habits into new ones, are differentiated in consciousness the self and the world, purpose, desire including emotions, and thought. This differentiation is gradual. The world of the child and the world of the adult are not the same. The child does not see or hear or feel all at once the world as it appears to the adult, but must slowly learn to see, hear, feel, taste, smell and also to desire, purpose and think. The direction of this learning is guided by attention and attention is selective in the

service of his activity. As a child develops his world, he develops also his individuality. The self and nature develop from a social plasm and individuality is a final stage in the process of this development.

So far as a general distinction can be made, desire (feeling) is the basis of the appreciation of worth and out of it come ethical values; thought is concerned essentially with efficient causal values. One sets the aim for the activity and the other gives the means of control whereby the aim may be reached. The aim and means however are not disparate but complementary. They are terminal aspects which the finest analysis cannot completely separate: the aim always contains some thought and the means some appreciation. In knowledge as socially accumulated, the one is emphasized in religion, literature, art and history, and the other in science. Even whole social movements in the history of mental progress may be characterized by the dominancy of one or the other of these in their natural order. The Renaissance, or humanistic movement, was one of appreciation; it established ideals: the Baconian or scientific movement was one of control; it furnished a method for controlling experience in the realization of ideals.

Appreciation is immediate and emotional and therefore cannot be objectified and analyzed. It is the conscious thrill of the self realizing its true nature. To use a psychological analogy, as the world of "external" vibration is revealed in color, sound and other qualitative sensations, so the tensions in our habits are revealed in feelings of worth. The validity of knowledge can have no higher sanction than its ability to guide to the realization of that which is appreciated.

Means to these appreciated ends become conceptually separated into things; *thinking* indeed is etymologically *thinging*—it constitutes the values of things as means by putting meaning into them, and, since a means gets its values or significance by relations to the ends, the meaning of a thing is its relations. In the service of any particular activity, the essential meaning of a thing is its causal relation in that activity. By virtue of its relations to ends from which it can be separated only conceptually, a thing involves in its meaning also some appreciation. Since the idea, or accepted meaning of a thing,

is nothing apart from the ends for which it has value, the complete idea of a thing is a plan of action or a composite of plans of action. Things are the product of thought in the service of action; and, in their relation to thought, they may be viewed either as to their use as products or to the process by which they are formed, although these two phases cannot be sharply separated.

As products, things become elements for the understanding of the meanings of situations of which they are component parts. Thought consists of both analysis and synthesis. By a process of analysis, situations are reduced to simpler facts through the noting of similarities, of immediate or remote practical value, in various situations and abstracting them from the phases which are unlike, and these facts are reduced to still simpler ones by the same process more refined, until the elements, or facts which cannot be further analyzed, are reached. Then, to understand any situation is to see how these facts or things synthetically make it. When the elements have been thus taken into consideration, the completest possible knowledge has been reached. At any stage in this process of analysis, what is attended to may be regarded as a thing, so long as, for the purpose in view, it has one whole of meaning. Thus a town, a house, a brick or a molecule of the brick may be regarded as a thing. Each thing has a number of meanings of its own according to the relations in which it has been found valuable, but all of these meanings are not pertinent to one situation. The ringing of an electric bell may mean that someone is at the door or at the telephone or at the dumb-waiter shaft. Other things must be considered and a selection of meanings made. In combination with other things, or meaningful aspects, of the situation, some meanings are neutralized and the meaning that is left which is harmonious to all things in the situation, is the meaning of the situation. For instance, when the ringing of a bell, according to the analysis of previous situations, may mean that someone is at the door or at the telephone or at the dumb-waiter shaft, the thought that a caller is expected and the sound of someone in the hall may suggest which hypothesis is probably true and indicate what else within the situation should be observed in order to make the hypothesis a fact and reveal

the meaning of the situation. If, when the door is opened, the hall is seen to be empty, a new fact is discovered which has, roughly speaking, no meaning consistent with the hypothesis, and thus neutralizes for this situation one meaning of the ringing of the bell and destroys the hypothesis suggested. The thought then that the caller might telephone to explain his failure to come may make another meaning for the situation seem probable. If a voice is heard through the receiver, the hypothesis that the telephone bell was ringing becomes practically a fact and the meaning of the telephone call comes as a new problem, the old situation merging into a new one, the meaning of which is now to be determined. This is the general logical procedure in synthetically forming the meaning of a situation, whether in the thinking of the common every-day life or in the professionally refined thinking of the chemist and astronomer. By threads of abstraction, every fact is connected with every other fact, and the task of thought in its synthetic use of hypothesis and proof is to find the thread directly common to all the facts of any given situation. The recognizing of separate things, the analysis into elements, is for the sake of again combining them to make larger wholes explainable. When the meaning of a situation is determined, one's active adjustment to it is revealed to be inharmonious, and further activity is called forth in the interest of a more harmonious adjustment. How to control the elements of a situation so as to bring about a suggested new situation with a more harmonious adjustment becomes a problem for thought. The elements or things are adjusted in the imagination through logical processes and synthetically formed into a new idea, a plan of action, which normally, when definitely formed, is actively realized. This process of more harmonious adaptation is unending and the fundamental condition of conscious life. The methods of activity involved in realized ideas are conserved as unconscious habits, and consciousness is thus freed to progress by actively engaging in solving new problems necessary to new and finer adjustments. The ringing of the bell causes readjustment to answer the telephone, answering the telephone causes readjustment to prepare to entertain the speaker at dinner with the many adjustments involved in this, as ordering food, having it served,

etc. How to answer the telephone may have become a habit, but many activities necessary in preparing to entertain the guest would probably not be habitual, and, accordingly, require thought. The readjustment progresses socially, the activities of other persons being involved, each with his own related tensions and problems. Situations, like things, are not separate and distinct in themselves, but merely aspects of an infinitely complex social movement. Not only does the whole situation find its meaning in the elements which by synthesis make it, but the meaning of the whole is reflected so as to more closely determine the meanings of the elements. What is a situation to one class of facts may become a fact as an element of a wider situation. Thus does social experience become a whole of interrelated meanings, into the ultimate, most inclusive meaning of which it is the purpose of philosophy and religion to gain insight.

In the process of developing meanings, of making things, analogy is the fundamental principle of procedure. The world of knowledge is full of analogies, whether it be that of the ancient philosophers who viewed the universe as essentially air, fire or water, or whether it be that of the modern scientist with his atoms and etherial vibrations. The early animistic interpretation of material objects is due to the same principle which later led to a materialistic interpretation of mind. The present meaning of matter is shot through with subjective qualities. No one by analysis can find cause or force, substance or individuality in a material object. These categories can come to consciousness only through experience and they are experienced only in manifestations of will, in activity of a person. The analogy is so habitually made that there seems to be given in immediate experience of the object that which could come only indirectly through being read into it from another phase of experience. This debt is repaid by material analogies in the mental world, where there are bright ideas, deep thought, sharp wit, caustic criticism and dull comprehension. Again, in the development of science, each is interpreted in the light of the one developed earlier. The matter and motion of physics are read into chemistry; the concepts of chemistry, into biology and physiology; and the concepts of biology and physiology,

into psychology. Furthermore, we have no direct knowledge of other persons: our whole understanding of them is through analogy based upon our own experience. In fact, it is the very nature of thought to use images and schemes[1], so that the world of knowledge becomes an intricate symbolic construct the highest justification of which is that it works, that it gives control of experience. Here the particular sciences have an advantage over philosophy and religion; for, while the former interpret one phase of experience in terms of another, the latter try to interpret all in terms of a part; and while the value of a scientific interpretation can easily be tested, that of a philosophic or religious one cannot. Again, in science, causal necessity—a relation in time—is treated as logical necessity—a relation in meaning. Science has a greater certainty than philosophy or religion because it can treat qualitative differences in experience as quantitative, and thus, by regarding them as due to matter and motion and under a numerical scheme, can accurately predict the future. Progress then in the building of a world in consciousness is by interpreting one phase of experience in terms of another, the development of symbolism, in which, through habitual use, the fact that the interpretation is through analogy is lost sight of. The use of symbolism in the play of children, when ideas are fast forming, is especially noticeable. In the figurative expression of the deeper insight of the poet and in hypotheses in process of verification, the fact of analogy is more or less consciously present. When, in the interpretation of some fact, the inference or hypothesis suggested by analogy with some phase of experience where the relations are similar has been tested and proved valid, then habit makes it a part of the meaning of the fact itself. The ways in which inferences are deliberately formed and tested belong to the province of logic. In the logical process, hypotheses are formed through following abstract threads of similarity in experiences. Hypotheses in turn become facts when they are known to be effective in giving control over experience. The falling of an apple may suggest a new hypothesis, which, when established, becomes the fact of gravitation. When a new hypothesis is proved, it naturally gives a deeper meaning to the facts involved; for it reveals

[1] This fact affects the problem of the disciplinary value of a study.

new relations, and facts or things are but focus points of relations. The phenomena of the sun and planets receive a new meaning when the hypothesis that the planets revolve about the sun is proved to be true. Through the combination and refinement of cross-interpretations, meanings become more and more complex, and, in turn, furnish an ever more differentiated and therefore more adequate basis for the development of further meanings. Reality, therefore, is not static, but in a constant process of growth from simple to more complex forms: it is a self-differentiating unity.

Vitally connected with the development of control is the development of appreciation. Indeed, control is for the sake of realizing that which is appreciated, that which is the object of desire and interest. The means gets its value only by virtue of the relation which it bears to the end. Appreciation, which ultimately is an immediate emotional judgment of the value of an experience, develops through the experiencing of valuable situations either actually or dramatically in imagination. The restricted opportunities of ordinary every-day life become very much widened through conversation with others and through the imaginative experiences offered by religion, art, literature and history. When the situation is reproduced in imagination, the appreciation is immediate. The difficulties which must be controlled in order to have such experiences are those of creating the proper imagery. However, the appreciation as well as the control phase of knowledge gradually develops with greater and greater refinement so that one cannot get the proper appreciation of a situation—indeed, the situation does not exist for him—if his past experience has not prepared him for it.

As a person advances in knowledge, his individuality becomes more clearly defined; through increased control over his experiences, the ability to get what he desires, he gains in freedom; and, by the widening of his experience, higher, more remote and more differentiated ends present themselves, constructive imagination picturing desirable experiences which in themselves have never before been realized by him.

Thus far the individual aspect of the development of knowledge has been presented. But this development is possible because the individual is a social individual. He is in others and others

are in him. The same situation is, in a way, common both to him and to others. In this community, there is correspondence rather than identity, because different individuals have different degrees of realization. Biology expresses a similar truth by saying that the environment is relative to the organism. But not only is a situation known, in a way, in common: it is also controlled in common. One individual, by changing his own situation, also changes that of another, whose habits are thus interfered with. The meaning of the change may not be the same to both: its interpretation in either case depends upon the past experience of each individual. This community of knowledge and control is the basis of the accumulation of knowledge. This accumulation has come very slowly. Even the simplest ideas have been ages in the making, each generation vicariously helping to create the world in which the next is to live. And this has been possible because, through changing the common situation or environment, one person can, whether purposely or not, direct the experience of another. As the inner experiences of individuals find their expression in outer form, matter, that which is in a degree common to all as a permanent possibility of experience, is made the bearer of purposes and ever becomes more spiritualized. The adjustment to this spiritualized environment and consequent realization of its meaning is always a result of individual activity on the part of others, whereby the outer form becomes the condition of inner experience of which it was originally the expression. As a medium in which individuals' experiences may be registered so as to exist in possibility for others, matter is the ultimate social bond and the bearer of social purpose. In this way each generation has been taken through those types of experience which the race has found to be most valuable, and, after adding its own small contribution, has passed it on as an inheritance to the next. This inheritance, again, is never something to be given from without but comes to the individual only when he actively passes through types of racial experience, society making this possible by determining the situations in relation to which he acts. In the service of accumulating, conserving and transmitting this inheritance, institutions have arisen as social habits, including language, home, civil society, state, church and school.

CHAPTER X

Educational Implications

For countless generations, education was the result only of imitative play and active participation in the community life; but, as the race developed and its experience became very wide and very complex, there arose from necessity a special institution the purpose of which is to consciously direct the activities of the younger generations in such a way that typical forms of experience which the race has found most valuable are repeated in their experience. Thus the school, as a conscious attempt to promote human evolution, economizes energy and makes a greater development possible. The problem of this chapter is to give, in the light of the theory of knowledge accepted, some general interpretation of the working of the school.

The three most essential features of the school may be conceptually separated into the curriculum, which represents the social phase and gives values; the nature of the child, or individual agent through which values socially determined are realized; and the method of teaching, or the process by which the child is influenced to repeat selected typical experiences.

The Curriculum. The curriculum is for the teacher and indicates the direction which the child's experience is to take. It should represent those types of experience which have been found by the race to include the most satisfactory ends and the best means of control for attaining these ends: in other words, to develop the truest sense of values and a knowledge of laws necessary to their realization. Under the guidance of this formal principle, the actual content of the curriculum must be determined empirically.

In the school there is much of educative value that is not mapped out in the curriculum. Aside from any special studies, a child's social intercourse with teachers and pupils exercises a most powerful influence in the development of his sense of worth. As he can understand others only by putting himself in their places in imitative play or in a more or less imaginative

way and then ejecting his experience into his ideas of them, by understanding them he widens his own experience, and, by solving the little problems which arise in his own situations every day, he gains in control; but all this is characteristic of the life process everywhere. The distinctive work of the school is to consciously direct this by means of selected branches of study; or, in other words, selected typical experiences. Those studies in which the appreciation aspect is more prominent are called humanistic; those in which the control aspect is more prominent, scientific.

The humanistic branches are literature, art, history and religion. Among these no hard and fast distinctions can be drawn. They agree in that they are essentially understood subjectively through emotional attitudes, whether ethical or aesthetic. In history and religion, the will attitudes are more prominent; in art, the aesthetic, or the feeling of pure worth with the will or activity minimized; and in literature both. While art and literature include many experiences more or less complete and satisfactory in themselves, history and religion look to an all-inclusive unity from the subjective side. Religion tends to become the attitude taken towards reality as a whole, while history works toward a unity in men's will attitudes or purposes, showing how one will attitude or purpose binds another so that all may be viewed in relation to a subjective unified whole. The belief in a world purpose is essential to religion; and, too, purpose is essential to history, for this category alone can unify the multiplicity of human acts by giving meaning to them. The objective facts of religion and history are the symbolic guides in this interpretation. Thus do these humanistic subjects include the best of the world's experience in which the appreciation aspect is more prominent. To be understood they must be relived; and, in the reliving of them, is an individual taken from a narrow and mean life to one of world-wide significance, in which the ambitions of rulers, the ecstasy of artists and the devotion of saints may to a greater or less extent become a part of his own experience.

In the earliest experience of the race, all interpretation was of this subjective character; for an animistic interpretation of nature consisted of reading or ejecting into natural objects

subjective phases of experience. But gradually, from the animistic interpretation, one personal element after another has been eliminated by abstraction until there is left only such ideas as force, individuality and substance which are of subjective origin. With the elimination of such characteristics of personality as purpose, feeling, freedom, the objective phenomena became strongly contrasted with the subjective. Objects were no longer emotionally appreciated in order to be understood, for there was no love nor hate nor any other form of personal relationship. It then became possible to abstract the objective phenomena from all subjectivity and unemotionally regard them as constituting a purely fatalistic realm, in order to discover their independent value in the realization of purpose, in determining the future—their value in efficient causation. This was found by the discovery of uniformities in causal values, when, in the interest of particular problems of control, observations were made and hypotheses formed and proved. Thus was science born. The mental process through which it develops has been analyzed so as to give a scientific method; and, in the service of this, a more and more elaborate technique is being devised. Scientific method is never more than a means of controlling experience in the interest of some purpose, some end, teleologically and not efficiently determined. It is therefore always a servant and never a master. Therefore it can never exhaust the essence of personality, of will, although by substituting the psycho-physical organism for the real person, some natural law may be discovered in the spiritual realm to be used in the interest of control.

Every fact has its worth to be appreciated as well as its causal value to be understood. The sciences which deal with object matter, the meaning of which involves more prominently efficient causal values, give exactitude and are merely descriptive; the sciences which deal with subject matter, the meaning of which involves more prominently the appreciation of worth, or final causal values, give insight rather than exactitude and are normative. The one is chiefly concerned with what is; the other, with what ought to be. The one tells directly and precisely what must be done in order to accomplish a desired result; for instance, if one wishes to make oxygen, he must

treat potassium chlorate under accurately defined conditions: the other reveals a criterion whereby the more teleological values of possible courses of action may be objectively judged in the interest of a remoter end the worth of which is only immediately felt; for instance, if a person has in mind some objective act, the golden rule of the Bible or the golden mean of Aristotle or the categorical imperative of Kant is intended to give a means whereby its relative worth may be determined. In grammar, logic, ethics, aesthetics and education, normative principles are revealed by an objective study of the concrete data of what is felt ought to be. The distinction between the descriptive and normative phases of a science is relative rather than absolute: ethics, for instance, is more normative than grammar, and physics more descriptive than sociology. Descriptive sciences are in a degree normative, and normative sciences are in a degree descriptive. In the control of experience, a mere knowledge of normative science is comparatively valueless, except as a guide in the choice of activities otherwise determined. Apart from originality in arguments, conduct, or methods of teaching, logic never made a good debater; ethics, a just man; or theory of education, a good teacher. Progress here is made by eliminating the worse and following the better activities, as revealed by the criteria of judgment given in these sciences. In science, either the form or the content of objective experience may be emphasized. In mathematics, the quantitative forms of time and space are abstracted, and, accordingly, single observations are of universal validity. In the so-called natural sciences, the particular qualitative content is regarded and thus a large number of observations becomes an important factor. If the two are united, the qualitative facts being translated into temporal and spacial and therefore mathematical schemes, an exactitude is reached which greatly increases control. Biology, psychology and sociology are less precise than physics and chemistry, because such translation has not, to any great extent, been made. However, in the development of scientific technique, mathematical schemes for the measurement of variable quantities have been devised, so that the less exact sciences are becoming more precise.

Appreciation and control are but phases of one process. Means and end are distinguished only by greater emphasis on one or another aspect of a unitary process or plan of action. There is no means wholly without worth and no product independent of the process out of which it came. Every purpose, no matter how immediate and insignificant, involves both of them. What is means for a more remote purpose involves an end for a more immediate one. Thus does every activity bring a realization of worth, so that the work of the school not only prepares the child for higher realization later, but is a part of the child's life worthy for its own sake. Both control and appreciation should receive normal emphasis in this moral development. The humanistic subjects may awaken the judgment of ideals, which reveal the deeper significance of daily activities, but the worth of these ideals does not become in any degree realized in the life of the child until his daily activities are controlled with reference to them. However remote the ideal may be, if it is a worthy one, conduct with reference to it is registered in moral habits, or, in other words, good character. If control is neglected, mere appreciation degenerates into vapid sentimentalism, injurious because it develops habitual tendencies opposed to worthful activity; and, if appreciation is neglected, activity loses the meaning which makes it worthful. Both scientific and humanistic phases, in some degree, are inseparably involved in every experience of the child. One is essentially the expression of intellect and the other of feeling, while will is their active realization in the unity of experience. As complementary aspects united in will, they exhaust social experience, and consequently there is no dualism in the curriculum.

THE CHILD. The learning experience of the child is a continuous process which originates, exists and ends in activity. It begins when habits of action are obstructed or conflict and has as its end successful harmonious action. The conscious process involving the tension on the one hand and the successful action on the other has four prominent aspects:—

(a) A *purpose* growing out of a tendency to act and presenting as its terminal aspects an actual situation felt to be unsatisfactory and a desired ideal state partially at least defined in the light of past experience. The tendency to act is primarily

determined by an instinctive equipment, which varies in different children and in the same child at different ages. The child's interests are relative to these instincts, the significance and worth of which can be determined only in the light of the curriculum, for it embodies the best forms of expression that social experience has found for them.

(b) A *logical process of thinking*, an imaginary constructing and testing, which determines the plan of control by which the present may be transformed into the ideal situation. It is true that the mere solution of a thought problem may itself be the immediate end desired, as in the case of a student of descriptive science or of ethics; yet normally this end is never ultimate, but rather a means to the satisfaction of needs which have arisen in social experience. Thought, as other activities, may be advanced through co-operation where individuals become specialists, attending to particular phases of it. But even in this specialization, however narrow it may be, whatever thinking is done has all of the features of thought in its wider significance.

(c) An *activity* which is guided by the knowledge resulting from the logical process of thinking, and which controls the child's experience so that, if the logical process is true, the tension which gave rise to his purpose is removed, and, in so far as this particular tension is concerned, the situation becomes harmonious and satisfactory. The successful activity is conserved by habit, and, in the process of repetition, tends to become unconscious. In this activity new experience is gained.

(d) The *organization* of the new experience with the old, the unitary result as habit giving meaning to a new situation. In this new situation tensions at once arise, leading to a new ideal and thus forming a new purpose.

This process continues during conscious life. The four aspects which have been conceptually abstracted do not occur one after another, each being completed before the subsequent one appears; but they involve one another in such a way that there is a constant movement back and forth among them, each being more or less defined by the others. This process is always one of self-activity from its origin in instinctive impulse to the accumulation, through habit, of appreciations of worth and plans of control, forming continuously an apperceptive

mass which gradually creates the child's world, defines his individuality; and, by gradually making him master of his situations, gives him an ever-increasing freedom.

THE TEACHER. The school-room life is normal for the teacher as well as for the pupil; and, accordingly, he grows in experience through his own purposes, thought, activities and organization of habits: but the peculiar function of the teacher in the school room process is to mediate between the child and the curriculum. The further problem has to do with the nature of this mediation.

The teacher, naturally, must have a knowledge of both terms of the mediation and the ability to interrelate them; in other words, he must have (a) a full and rich experience of the nature of that selected in the curriculum, (b) insight into the nature and degree of the realization of the mind of the pupil and its instinctive tendencies, and (c) ability to create those situations the active responses to which will cause the child to pass through the desirable types of experience indicated in the curriculum.

(a) Since the curriculum is not something apart to be mechanically transmitted, but types of being which exist only in active experience, the teacher, first of all, must have sound scholarship. The character of his scholarship determines the degree and definiteness to which the curriculum exists for him, and only as the curriculum exists in his own experience can he see the potential values in the child's activities or guide them to desirable forms of realization. Since every new and richer experience enriches the meaning of all the rest, the better the teacher's scholarship, the more definite and exact become his understanding of the meaning of the curriculum, even in its more elementary forms. Unfortunately, what often stands for sound scholarship involves pedantic, or perverted, types of experience which have grown out of the school itself and which have no real worth in genuine education. The purpose of the school is not to condition new kinds of experience peculiarly its own, but to condition experience valuable independently of it. Thus only by losing itself does the school find salvation. Much of the teaching today is tainted by this perverted scholarship, which persists through tradition and which can be eliminated only through a deeper insight into the real meaning of education.

(b) Again, since the curriculum is not something apart to be mechanically transmitted, but types of being which exist only in active experience, the teacher must have an insight into the nature and degree of realization of the child's mind together with its instinctive tendencies. New experience grows out of the old. A situation for the teacher is not the same for the child, because a situation depends upon past experience and much that the teacher sees and feels is not there for the child, while some aspects which are not present for the teacher are experienced by the child. Interest, which is essentially related to instinctive tendency, is a determining factor in defining a situation. Now only that which is a conscious situation for the child is effective in his education. Since one person understands another by ejecting his own experience into his idea of that person, a teacher may be prone to deal with a situation as though it were identical for both him and his pupil. Conditions which make a typically valuable situation for the teacher may make a comparatively worthless situation for the child and produce a comparatively worthless activity. A child brought up in the slums and one educated in a refined community may have neither the same appreciations nor the same problems under what for the teacher is a unitary situation. Between these two extremes, there are numerous social classes, the children of each of which have a more or less different character of realization; and, even in the same class, the experiences of no two individuals are identical. Interests and appreciations, too, vary with instinctive equipment. For instance, a genuinely romantic experience cannot be had before the adolescent instincts have appeared. To analyze one's own experience, and, through sympathetic insight, to imaginatively construct the world of problems and appreciation as it appears to the child, is the starting point for rationalized teaching; for, while the curriculum gives an ideal copy in accordance with which the child's experience is to be directed, the only material with which the teacher has to work is the child's realized world of appreciations and problems, which for the teacher must exist as an imaginative construct.

(c) For the third time, since the curriculum is not something apart to be mechanically transmitted, but types of being which exist only in active experience, the teacher must have ability to

create in the child's experience those situations, the appreciations and problems of which condition active responses that constitute a gradual realization of the curriculum. Since the purpose of the school is to condition the repetition of types of experience which the race has found to be valuable, the method of teaching is not discovered merely within the walls of the school room, but is revealed through an examination of the way in which particular experiences to be repeated first came into existence. The essentials of the situation in reaction to which the desired experience was originally brought about must be reproduced in the school. Many situations typically valuable can be produced directly in the school. The teacher may be of that moral character which socially has been pronounced worthful. The school building and its furnishings, especially the mural decorations, may represent what socially have been judged to be the highest expressions of art. In the laboratory, materials may be manipulated so as to produce directly the very tensions or problems that stimulated scientific discoverers. Other direct situations may be found in museums and on excursions from the school building. But the cycles of history cannot be made to repeat themselves in the school room, situations in literary creations cannot be directly reproduced, excursions cannot be made to far away parts of the world. Nature, however, provides vivid imagination in which can be reproduced situations, the material basis of which cannot be directly presented. As a matter of fact, situations consist mostly of imaginary elements in any instance. A chief function of the teacher, then, is to cause symbols, whether written or spoken, to be translated into imagery, and, within that imagery, to create those tensions which condition appreciation and thought. Even to the extent of becoming unconscious of desks and black-board, the pupil must be led in imagination to kneel with Charlemagne and feel the thrill of meaning when the king is adorned with the crown of the Caesars, to struggle as Hamlet with the opposing motives of avenging a father and preserving a mother's honor, to see vividly the busy movement of industry in the great cities of New York, London and Chicago. Otherwise, his history and literature become the mere manipulation of symbols without the vital thrill of appreciation; and his geography, the memorizing of little colored spots on the map.

The failure of the teacher to fully perform his function as has been described is liable to result in a predominance of (1) *mere memory work* on the part of the pupils and a consequent (2) *lack of interest* in study, both of which indicate an inferior kind of activity.

(1) As has been shown (p. 51), the school does not exist for the purpose of creating experience peculiarly its own, but for the purpose of conditioning typical forms of experience which the race has found to be most valuable. A study is a typical form of valuable experience, and, unless the child goes through it identically in the way in which it was gone through when found to be socially valuable, he does not get that experience, but uses the symbols intended for it in getting some other experience. The use of and knowledge of identical symbols by no means necessitate identical experiences. As a conscious effort to memorize is not generally an important factor in experience as realized independently of the school, but rather a by-product of it, a predominance of memory work in the school is evidence of a perversion of study; it is using the symbols in a way to get a different kind of experience from that for which they were primarily intended. Memorizing as a conscious effort on the part of the student is a peculiar kind of experience with ideals and problems different from those of the study with which it is concerned.

The conscious life process is one of progressive adaptations (pp. 42 et seq.) through effort to remove tensions in the individual's present situations by realizing ideally projected situations through the control of experience. This is the process through which knowledge is acquired, through which both the self and the world are realized. In the economy of nature, when a new and useful adaptation has consciously been made, it is in a greater or less degree preserved by habit, so that consciousness is more or less freed for the projecting of new ideal situations and the solving of problems necessary to their realization. The strength and permanence of a habit depends upon the vigor and frequency of the adaptation. Now memory is a habit of consciousness whereby experiences are retained. Unquestionably, to fix by habit some physical act copied from another, the act must be performed in the exact manner in which the other per-

formed it. In no less degree is this true of memory; but, in the case of the latter, the fact that thought deals with symbols is responsible for misconception. These are looked upon as things involving facts to be mechanically impressed upon the memory. The reproduction of the symbol may be one experience while the reproduction of the meaning for which the symbol stands in the study may be another experience, and the failure to recognize this leads to confusion. It is indeed impossible to violate the law of habit here. Whatever is actually gone through is what is remembered, whether it be the manipulation of a symbol so as to impress it upon the mind or the more meaningful active experience for which the symbol stands; and, since the symbol is valueless without the worthful experience symbolized, to the extent that memory becomes a conscious effort, to that extent is it perverted, to that extent is it aimed not at the goal of the original experience, but at a new goal of remembering symbols. When an experience is gone through without effort to memorize, consciousness is centered upon purposes intrinsic in this experience, it projects an ideal and controls experience in the realization of this ideal; but when the pupil consciously makes an attempt to memorize that experience, there cannot be two goals and two processes of control at the same time, while memory superimposes upon the intrinsic experience the ideal of fixing it upon the mind and makes the problems of control those of how to remember. Accordingly, instead of a valuable and complete repetition of the original experience, there are in consciousness ideas which symbolize it, which say "I mean that" instead of actually being it. This symbolic reference is always more or less indefinite, very much so if the original experience has not been previously gone through with in a complete way. The memory experience, therefore, is not the original adaptation, but the fixing in consciousness of symbolic ideas which have reference to the valuable experience intended. Of course, with the symbol there may be associated, more or less, the meaning symbolized, as previously learned, so that the presence of the symbol carries with it some idea of the meaning, and for this reason memory work sometimes brings valuable results, but this is in spite of the fact that in the degree that memory is made a conscious effort, in that degree the aims of

the original experience are neglected and the experience is inadequately repeated. A complete idea is a plan of action, but in so much as it becomes secondary to another purpose, a mere object used in another plan of action, in that degree it is a less intensive realization of its complete intrinsic meaning and more a mere symbol. Accordingly, when the conscious purpose is to memorize, the experience to be memorized is less adequately gone through. If the memory experience is the valuable one intended, then all is well. Not only does observation reveal the fact that mere effort to memorize is not so common out of school as in it, but the economy of nature demands that a valuable adjustment be remembered *per se*, rather than through another experience superimposed upon it, a supposition which psychological investigation seems to support.

Memory as a habit is a storage of adaptations. The nature and value of this storage may be examined still further by attending to each of the three phases of the memory process —*retention*, *reproduction* and *recognition*.

By *retention* is meant the creation of a predisposition to the activity, the fixing of the habit. The activity realized is the one which becomes a habit and not some other activity—a fundamental and obvious principle of habit formation, which is of great importance in the understanding of the process of memory. Nature economically provides that the more intense the activity and the greater the frequency of repetition, the more strongly is the habit fixed. These are well-known matters of fact established by psychological experiment and need no proof here.

Any self-active experience consists of the realization of an ideal through some means of control, the latter of which may be sub-divided into objects of control and methods of controlling them. The objects are already in one's situation, they are the result of past experience and thus become the basis for further activity. The mental activity leading to the realization of the ideal is always concerned with the method of control, the ways in which these objects may be used to bring about the ideal situation. It is true that often other objects of control than those immediately present in consciousness must be sought, but here again the activity is concerned with method, with how to use what is present in order to gain what is needed. The

vital flash of activity, the very exertion of will, the essence of self-activity, is manifested in the managing of these objects. In this process, new objects may be created in experience and become the basis of control for further activities, but, in every case, objects of control are data to begin with and the essence of active experience is in the control of them. Thus is new experience realized. As the meaning of a thing is its relations, new relations discovered in the interest of control create new meanings. Now, when the experience which a study represents is gone through in the normal way, i. e. in the way in which it was first gone through when chosen as a valuable type of experience, the method of control creating new meanings is actively relived and burned into consciousness by a flash of will, thus taking on the nature of habit; but when the ideal or purpose of the student becomes the remembering of this experience, then the method involved actively in the original experience, the essential part of it, becomes an object to be controlled by a new method which gets the flash of will, i.e. the method of using this object in order that it be remembered. The activity then leaves as habit not the essential experience for which the study stands, but the experience of how to remember it, which, in this case, is of no essential value. No lesson involving new experience other than that of the memory process can be learned by pure memory work, for the objects to be remembered must be created by self-active experience involving judgment before they become objects of memory. Otherwise, memory effort connects symbols not by the new valuable meaning intended, but by some previously experienced and remembered meaning, perhaps remotely analogical and without practical significance. There is always a danger of this when the symbol is given before the meaning is felt. If the new meaning in its fulness is present in consciousness, the study has been realized, and a more lasting memory habit involving it can be made by repeating the experience in all its essential phases. Memory work is usually compromised with inadequate experience of what is to be remembered, in which the student deals with symbols the full meaning of which he has not experienced, so that his energies are divided between a more or less vague realization of the study and memory effort. The energy used in memorizing is not only wasted, but is diverted

from that use which would best cause the memory desired. Just as there is a difference between pleasure in desire and desire of pleasure[1], so it is evident that there is a difference between the memory involved in an experience and the conscious pursuit of a memory experience; for, as in ethics against all those who make pleasure the end of action stands the paradox that to aim at pleasure is to miss it, that to find happiness one must seek something else, so against all who make memory an end in study stands the paradox that to aim at memory is to miss it, to store up rich experiences in the mind, one must seek something else.

As has been said, the retention of an experience depends upon its intensity. The intensity of a conscious activity depends upon the degree to which the end in view is desired. This requires that the value of the end be felt, its immediate realization being obstructed. The ideal of memorizing an experience in connection with the study of it is usually not sufficiently attractive to arouse a very high degree of activity, so that, if the real valuable ideal in the study itself is lost sight of in an effort to memorize, the amount of activity is decreased and the memory consequently weakened. To strengthen this effort, ideals extrinsic to the study, such as getting rewards, pleasing the teacher, passing examinations, etc., are forced upon the student. Now, a study is selected as a valuable type of experience because of some intrinsic ideal, and not because in a schoolroom the memorizing of that study will please the teacher or enable the student to pass an examination. To the extent that extrinsic ideals are employed, to that extent the experience in the study is merged into a situation in which it has no value of adaptation to normal situations of life, and to that extent does it lose its value as a study. Indeed, if extrinsic motives to memorize were removed, effort to memorize would in most cases disappear and, where it did remain, it would be legitimate as a necessary part of the study and would not be something created extrinsic to the study by school conditions. Again, repetition more strongly fixes an idea in memory. But in repetition only the conscious activity is impressed by the law of habit; and, just as in shorthand the beginner may spell all the sounds of a word, but later through repetition can omit the vowels and even many

[1] Cf. Sidgwick: *The Methods of Ethics*, Book I, Chap. IV (Fifth Edition).

of the consonants, so that a slight sign at once means the whole word; so, in remembering anything, certain phases of it or feelings connected with it become symbolic of the whole, and through repetition these representative ideas become more and more symbolic, involving fewer and fewer characteristics of the objects. Therefore, the more an idea having a certain experience as its object is repeated for the sake of memory, the less is the typical experience realized.

The second phase of the memory process is *reproduction*. While some experiences may be so deeply impressed upon the mind that they become conscious without apparently any associations, just as one may make some very habitual movement where there is no situation to call it forth, yet ordinarily ideas of objects remembered come to consciousness through association[1], there must be some cue to bring them into consciousness. Activity adapts the individual to his environment, takes him from an unsatisfactory situation to a more satisfactory one through the control of means. The value of memory is that, when any such useful adaptation has once been worked out, the essential phases of the situation, when they recur, bring into consciousness both the ideal and the means of realizing it. One's whole life is an interrelated chain of purposive experiences in which what is an end in one experience is a means in another, so there is a running flash of will burning into consciousness experiences in organic relations, ideals as well as means of control. To be of value, then, memory must associate things in useful relations so that a situation is a cue for further activity. Now, that which marks an experience to be of value for repetition in typical form as a study is the original active relation, in which there is no conscious effort to remember, but to realize some other ideal. This relation of situation, ideal and means of control within the study constitutes the value of the study, and, to the extent that any other situation or any other ideal or any other means of control is in consciousness, to that extent is the study sacrificed for the sake of something foreign to it. If the original experience selected as a study involved no conscious effort to memorize, then the repetition of that experience in the school should involve no conscious effort to memorize.

[1] Cf. James: *The Principles of Psychology*, Vol. I, Chap. XVI.

Furthermore, there is a tendency in psychological analysis to deal with only the intellectual phases; and, accordingly, in the analysis of memory, the emotional phases are apt to be neglected. Not only is there association within objective experience so that one phase will act as a cue to call up another, but there is also an association between objective experience and feeling. Indeed, a feeling of depression due to ill health is apt to be accompanied by gloomy ideas. The feeling that one has in a situation may call up objects that were formerly associated with a similar situation. Now, feeling is generated normally when the attainment of a greatly desired ideal is delayed, and, psychologically speaking, presumably results from the overflow of energy, normally for the purpose of control, into various organs of the body. Accordingly, to produce a valuable feeling in the study, the situation and ideal of the study must engross consciousness so that the realization of the ideal within the study is identified with the personal well being: if the ideal which does affect consciousness is not that of the study but rather the purpose of remembering, not only is a different feeling engendered from that which is vital to the study, but the intrinsic matter of the study becomes from the self a thing apart rather than the self's very existence, so that the feeling phase of the intended experience is lost.

The third phase revealed in the analysis of the memory process is that of *recognition*. From the intellectual standpoint, recognition is explained by the fact that through association any phase of experience finds its place in the continuity of the individual's past experience. In connection with this, it is evident that the experience of a study stands in more definite relation to the continuous life experience when the study is relived in a normal way and engrosses consciousness so as to form for the time being the whole of conscious experience, rather than when a remembering purpose engrosses consciousness and the content of the study exists as an objective meaning symbolized instead of being actually relived in time. Here again the emotional phase is worthy of consideration. Since memory is a habit, an experience is impressed upon consciousness just as it occurs. As has been said, when a desired ideal identified with one's personal well-being is realized through a

process of control, there is an accompanying emotion. When the experience is reproduced in memory, this emotion is to a greater or less extent reproduced with the other phases of the experience, which makes in the remembered past a feeling of familiarity that is not present in a mere creation of fancy. Indeed, in extreme cases, a memory of harrowing experiences will quicken the heart-beats and affect the rate of breathing—evidences of emotion—when the recall of the same kind of experience objectively learned from the words of another would not have such an effect. Intellectual and emotional associations develop together: with new ideas recalled are new feelings that blend to make the feeling of recognition stronger, while this stronger feeling by association tends to recall other ideas.

To sum up, the best conditions for retention, the creating of the strongest and most useful associations for reproduction and the nature of recognition demand that the ideal within the experience be made for the time being the student's own ideal and the logical process involved in the realization of it be made his active process, to the end that the study be normally relived, in which case the memory of it would result as a by-product. The study of spelling, which apparently depends most upon memory, may be chosen for illustration. The general principle of method (p. 59) is that the essentials of the situation in reaction to which the desired experience was originally brought about must be reproduced in the school. The normal use of spelling is in recording, for the sake of communicating to another or to the self at another time, a past experience in accordance with some desired end. The experience of spelling ordinarily arises when someone, in writing, senses the difference between the correct and incorrect spelling of a word to the degree of feeling uncertain in regard to the matter. Satisfaction may then be got by analysis of the word into its roots the spelling of which is known, use of the laws of memory reproduction in recalling past experiences of the word, the application of a rule previously experienced in a logical way, reference to some objective standard, or other means. Accordingly, there is a present situation involving uncertainty in regard to the spelling of a word which is being used in accordance with some desired end, an ideal situation which is subordinate to the main end

desired and involves the satisfaction of certainty, and the means of control as indicated above. Now, the primary condition of the normal teaching of spelling as a valuable type of experience to be repeated is a consciousness on the part of the student of a tension in the present situation and the projection of an ideal as indicated. If this is not present, then he must be put under conditions in his reaction to which this consciousness will be produced, but these new and more or less foreign conditions should be the least possible to start the desired process, which, when well started, may continue without such assistance: their function in this respect is analogous to that of medicine in producing proper functioning of physical organs. Often teachers underscore misspelled words and sometimes even correct them. If the misspelled words are indicated to the student, the fundamentally valuable ability to sense certainty and uncertainty in regard to the spelling of words is neglected and the basis for self-development in this direction is not strengthened as it should be. When the correction of words is made by the teacher, training in normal means of control also is neglected. It would be better merely to indicate that a certain number of words are misspelled. Then the student, either of his own initiative or through influence of the teacher, may separate the certain from the uncertain and the more certain from the less certain, and remove these tensions of uncertainty by further logical procedure, acquiring thereby those habits of judgment which are essential to the experience for which the study was selected. Thus would correct spelling be better retained, recalled and recognized. The essential process, that leading to certainty, would be retained. Since the essence of self-activity is in the realization of the method of control (p. 65) and since only this self-activity is retained through memory as a form of habit, whenever the situation of the misspelled word is experienced, the remembered process of control bridges to the correct spelling with its accompanying feeling of certainty. As this process becomes more habitual, the bridging is done more quickly until the one situation is merged into the other; and, when this occurs, the correct spelling is completely learned. Again, when the end in view is not some extrinsic reward, but the removal of a feeling of uncertainty in regard to the word in

question, the ideal is intrinsic to the experience of the study and the interest is more centered in the active process of that experience, both of which facts increase the intensity of the essential experience desired and therefore increase the retention of it. When the spelling experience is repeated in this way, in so far as correct habit has been formed, it tends to become less and less conscious, so that consciousness is further occupied with those phases of the habit which are not properly fixed. Thus does the whole consciousness focus upon removing smaller and smaller tensions, intensifying the very activity which is most needed. When there is no further tension, when there is certainty, repetition has done its work and retention is perfected. Reproduction, as has been said, is through association, which is merely the organic relation of various phases in the process of an activity. When the study is realized in the way suggested, this activity leads directly from the unsatisfactory spelling through a process of control to the corrected spelling with its intrinsic satisfaction. The associations, therefore, are made along the line which leads directly out of the difficulty to the desired goal, and, consequently, are useful associations, which would not be the case if they ran off on tangents to ends which are foreign to the study. In a spelling lesson or any other lesson, to the extent that there is given what activity would normally be called upon to work out, to that extent is the activity of consciousness directed elsewhere, beyond the confines of the study where useless associations are built up. As has been indicated, feeling is due to a tension between a present and an ideal situation. Accordingly, when the study is repeated without extrinsic ends, the feeling is organically connected with the more or less prolonged process through which the ideal in the study is reached; but, when an extrinsic end, as reward for remembering a study, gives motive to the active experience, the feeling is centered elsewhere. Instead of arising from the process leading from the incorrect to the correct spelling, it is centered in the tension between the present situation and the reward for memorizing. As feelings, through association, have value in the process of reproduction, those feelings which arise from the tensions intrinsic in the study are the ones most advantageous to memory. Again, since recognition depends more or

less upon the experience finding its place in the continuity of past associations, if the process leading from the incorrect to the correct spelling engrosses the whole consciousness for the time being, the experience stands in more definite relation to the continuous life experience than if consciousness were occupied to a greater or less extent with a memory purpose. Then, too, when the tension is between the correct and the incorrect spelling, the feeling of uncertainty growing into certainty is more intense and therefore better retained, so that, when the correct spelling is again met with, it is accompanied by a strong feeling of certainty, of familiarity with the correct spelling. Indeed, the development of this feeling is of greatest importance in the learning of spelling, for its presence marks the words that are known. One does not depend so much, in recognizing correct spelling of a word, upon placing it definitely in the continuity of past experience as upon that feeling of certainty which is an immediate accompaniment of the word and marks it as familiar. Indeed, when this stage has been reached, memory has done its perfect work, habit has been completely formed, feeling disappears to return only when needed in a tension, and what was once mediately remembered is now immediately perceived to be a fact. Finally, when memory is made only a by-product of the repetition of the intrinsic experience of spelling as a study, not only is the spelling better remembered, but there is developed that sensing of correctness and incorrectness of words and that method of control in correcting them which would naturally bring further improvement independently of the school. The medicine of school-room method thus effects a cure in making the spelling activity function properly and eventually is needed no longer. Implied in this discussion is the fact that training in spelling properly given involves training in penmanship, composition, meaning of words and in thinking. From memorizing a poem to learning a geometry lesson, these general principles are applicable, whether in individual study or in class recitation.

(2) The lack of interest due to the failure of the teacher to fully perform his function remains for consideration. Life independent of the school is throbbing with interest for normal people. If the school causes the repetition of the most valuable

types of this experience, the work of the school also should be interesting. The nature of this phase of mental life must find its meaning in relation to the wider life process. In the typical illustration of the rise of conscious life (p. 43), when the child cannot carry out his habitual tendency to reach the apple, there is a tension out of which originates feeling, involved in desire with its appreciation of worth of the end or ideal of getting the apple, and thought as a means of control in realizing this end. A similar tension exists between any present and ideal situation. Now, interest is primarily emotional and therefore is concerned with the appreciation of worth, getting its vitality from the end which the individual is delayed in realizing, and manifests itself together with attention, its objective counterpart, while the agent is in process of bringing about the realization. When this particular tension ceases, because the ideal is attained or because it is superseded by a tension between the present situation and some other ideal situation, the particular interest vanishes. That an emotion called forth by the appreciated worth of an ideal should attach itself to the means of control is not strange, for nothing is commoner than the transference of feeling to that which is associated with its primary cause. A mound of earth that otherwise would be regarded indifferently, if it marks the grave of a friend, itself affects one as though it were sacred. The warmth of feeling hidden in the concepts of home and country is a composite of the emotional phases of all experiences associated with them, constituting their meaning. In interest this association is a very organic one, for the end as product is not really separable from the controlled process out of which it comes. The general application of this to teaching is simple. For a study to be genuinely interesting, the intrinsic ideal of the study must be identified with the student's own well-being and the problems of control must be made his problems. Effort is sometimes considered to be the opposite of interest, and, as opposing earlier interest, this is in a sense true, but there can be no effort without interest, for it is due to a conflict of interests. In the process of realizing a more or less remote ideal situation, other ideals become conscious, together with tendencies to actively bring about their realization, so that the way to overcome the digres-

ing interests is to strengthen the remote ideal, which may be done by bringing into consciousness ideas of well-being that would come as a consequence of it. Conditions should be controlled as much as possible so as not to suggest conflicting ideals. The value of effort consists in the fact that its presence signifies that a habit is being formed of creating conditions which lead to the predominance of an original ideal, for the absence of effort may indicate that the individual is pursuing now this ideal and now that, as they have happened to come to consciousness, without accomplishing anything worth while. Aside from this, however, effort indicates a waste of energy, a conflict of activities rather than a direct realization of the original ideal. Greater freedom arising from control results when direct activities involving no useless digressions are made habitual. Accordingly, a study as a typical experience provides no intrinsic conditions to cause effort, but these conditions spring from the other experience of the student brought into consciousness together with the study, and may be merely the purpose of continuing a feeling of repose rather than engaging in aggressive activity. Effort is a friction, greater in some individuals than in others, which indicates that one is moving towards the goal selected despite opposing forces; but, if he can go forward without friction, so much the better. If the school reproduces the variety of typical experiences it should, the ordinary possible frictions in the individual's activity will be corrected; if they do not come, there is no use for them. The goal of effort is to prevent useless digressive activities and thus to destroy itself. In humanistic studies, literature for instance, there must be conflicting ideals presented, for value is a relation and the value of ideals are brought out by contrast with others, but here there is no place for effort, since, as in play, the means of control are neglected, so that the interest quickly changes from one ideal to another, their values being immediately appreciated. Interest itself is of no value unless it is conditioned by valuable ends. Since the function of interest is to lead to better states of well-being, natural selection in the evolutionary process has brought it about that what is active, i. e. changing or new in one's situation, since it is liable to affect his well-being, is interesting, but only temporarily so, unless it appears to be of value in relation

to one's purposes. These temporary interests may be stimulated in the school room, but they alone do not condition genuine study; for this a permanent interest is needed, one called forth not by novelty but by appreciated value. When an attempt is made to treat knowledge as something to be got into the memory rather than experiences to be lived, the interest conditioned is inferior in kind and ordinarily in degree. When a study is genuinely experienced, the interest is intrinsic and is conditioned by the ideal within the study being identified with the well-being of the student; when memory is consciously considered, the interest is conditioned by some ideal extrinsic to the study being identified with the well-being of the student. Interest gets its value from the process including the ideal which conditions it; and, if intrinsic, it indicates activity through the process which leads to the realization of the ideal within the valuable selected type of experience, or study, as a product. This activity marks the experiencing of the study in the fullest way; for the product is conditioned only through the complete realization of the process, which, for the time being, occupies the whole activity of the individual and becomes a vital part of his life process. The various phases or facts of the study are then known in the best way, for a thing is a focus point of relations; and, in such an experience, the facts are experienced in their complete normal relation in the process. When to remember a study is the conscious aim, the study is objectified, becoming from the self a thing apart rather than its own existence, and, accordingly, the phases, or facts, of the study exist as the objective and more or less indefinite meaning of symbolizing ideas which are to be remembered. This is conspicuously evident in learning by rote and has led to verbatim learning being put under the ban, but ideas are quite as symbolic in nature as words, for one phase of the meaning, and that often an unimportant one, vaguely indicates the whole, a truth which is not quite so patent and consequently overlooked. In a conscious effort to remember, the interest is not centered in the meaning of the ideas, but in the reward of remembering, and indicates an active process in which the ideas referring to the study are objects of control in securing this reward. Now, the facts of the study find their complete genuine relations, their true meaning,

in the study, and become useful knowledge only when their product is experienced as an ideal growing out of them, when they assume their normal relations in the active process. When the interest makes memorizing a conscious effort, the ideas referring to these facts are related in more or less mechanical way in associations which would most easily fix them in memory. Now, it is always true that to remember, the truth must have been lived in a normal way without effort to memorize: otherwise, the ideas which are instruments in memory would have no meaning. When an effort is made to remember symbolic ideas, they are related according as their meaning has been experienced in former activities, these associations, which may be of practically no value, being recalled. Mechanical associations in memory, a factual knowledge, means that the facts of the study are related according to some other experiences, and, since the meaning of a fact is its relations, the new meaning, which gives the study its value, is missed. This is especially noticeable in what is called "cramming". However intense an extrinsic interest may be, it marks an inferior experience, because the ideas symbolizing facts of the study are to a greater or less degree put into relations which are not those in which they exist in the study, but which nevertheless lead to the extrinsic end sought. Since these facts as facts of the study are known only when their true relations within the study are experienced, the extrinsic interest, however strong it may be, and however good the memory of facts may appear, indicates an activity that has run aside from that which would produce the knowledge intended by the study. To the degree that school life repeats valuable types of experience selected from those of society at large, the school conditions experiences identified with the highest well-being of the individual and therefore intrinsically interesting.

For the selection of a curriculum, the culture epoch theory offers the hypothesis that the interests of the individual in their development correspond to the interests of the race in its successive stages of development. The social environment of the present time, to which the new-born individual is to be adjusted, is not a creation independent of his nature, but the highest expressions of his nature that have been experienced. By a

vicarious process, each generation, as a result of numberless endeavors, most of which have been useless, has come upon some valuable new experiences which have been added to the fund it has received through education as an inheritance from preceding generations. Any experience which gives ideals felt to be more satisfactory than those previously experienced or means of control which give greater freedom is marked for preservation in the social environment. In this way nature becomes the greatest experimental psychologist, discovering and recording those activities which the human mind has found to be the most satisfactory expressions of itself. When old activities are no longer repeated, it is because a better expression of human nature has been found. It is true that many older and less valuable forms of experience are retained in various social classes that do not represent the highest advancement of their times. Many enjoy crudities in art which represent the attainment of a more or less primitive people, and, in ethics, criminals are those who practice forms of active expression which conform to ethical standards at one time or another the highest in the race, but now superseded by higher ones. The culture epoch theory is based upon analogy with the recapitulation theory, which holds that individual embryonic development recapitulates the phylogenetic series out of which it has evolved, a theory which was made in the service of interpreting the past in the light of the present, rather than the present in the light of the past. Several important phases in which the analogy is at fault should be considered. (a) The spiritual development of the race has been far more rapid than its physical development, because tools can be invented more quickly than physical organs evolved for accomplishing the same results, and the imaginary construction of ideals reveals higher worths much more rapidly than the organism could have blundered upon them. The appearance of mind in the evolutionary process does not eliminate chance variation: since thought is dramatic acting in imagination without the time, effort and physical results which physical activity brings, it greatly multiplies the number of variations and therefore the number of successful ones. This rapidity of social development would seem to preclude naturally selected physical changes which are the basis

of explanation of inherited tendencies, out of which interests would grow. (b) While physical characteristics can be transmitted only through direct physical inheritance, new mental activities can be transmitted through a social copy to those who coëxist with the one who first experienced them. This indicates that the new experiences are potentially in other individuals to be brought to realization by proper conditions; and, if they are expressions of the nature of these individuals, they would be interesting to them. (c) While past experiences which form a part of present social life can be repeated, to realize the essential experiences of a more primitive people whose ideas have been outgrown is incompatible with the present situations in which the child is placed. The ideal gets its meaning, its value, and consequently its interest, in relation to the present situation with which it is contrasted. To the well-kept child of to-day, tent-making and hunting do not get their interest because of protection from cold and satisfaction of hunger, that which made them interesting to the savage. Again, the literature of a primitive people is an expression of idealized forms of their experiences rather than the common daily life of the tribe. The child may be interested in it just as he may be interested in a colored cartoon without knowing what it symbolizes. There is one symbolization with two interests rather than the repetition of an earlier interest. Such studies are inclined to become the symbolization, through that which is connected with the lives of earlier peoples, of worths which are appreciated only in modern civilization. Finally, the literary expression of a primitive people has reference to the experience of adults and finds much of its interest because of adolescent instincts, which do not appear in the nature of the young child.

The tensions in the experience of any individual develop out of the situations in which he is placed, and these situations are determined, in a large measure, by his social environment, which he has in common with others and which changes with each succeeding generation. Matter, that which is in a measure common in social experience, is constantly changing in form so as to be the bearer of new social purposes, and it is this thought which vitalizes the present material world with which his adjustment must be made. The purpose of education is to pro-

mote the adjustment of the child to his present environment, to make more harmonious his experience of those situations which he has in common with others. He meets situations different from those in more primitive society and consequently his tensions are different. Not because of its interest alone, but because of its usefulness in promoting this adjustment, does a study get its value. This would mark many of the ancient superstitions as useless in present education, because they have been superseded by more satisfactory ideas which are quite as easily comprehended. The culture epoch theory, indeed, has some basis in truth in that the child must go from the simple to the complex, and more primitive conceptions are frequently simpler; but, in every case, the child in relation to his present situation is the determining factor of the advance and not the length or prominence of any cultural stages in the development of the race. Primitive life suggests many useful activities so simple that a child can do them—and in the bringing forward of such activities is the greatest value of the work of the culture epoch advocates—, but his satisfaction is in doing something rather than in the ideals which gave motives to earlier peoples; and, consequently, his actions have a different meaning to him. He can make a tent or weave by hand when he cannot build a house or use complicated machinery, and out of this come elementary ideas as a basis for more complex activities, but his interest is in the situation of doing something rather than in the usefulness of the product. He can take quite as much interest in playing motorman or teacher as he can in imitating an Indian medicine man or a Greek warrior. There are many short cuts in the formation of habits which better adjust him to the present; and, in such cases, there is a waste of energy in traversing the tortuous paths marked by the race in its gropings. The experience of the past is made vicarious when later generations avoid its round-about paths as well as those which lead to no desirable end.

Since the purpose of the school is not to create situations peculiarly its own, but to organize and develop the wider life of responsibility, life with its interests as experienced by the child without the school should vitalize the activities of the school. Reality as it differentiates in experience is an organic unity, so

that every phase of experience gets its full meaning only in the light of all the rest. Consequently, the studies of the school are a fuller expression of that very experience which the child has realized throughout his life. An ideal is not an ideal for an individual unless it is identified with his own well-being, and, therefore, the ideal in a study must be vitally connected with the pupil's living interests. His whole situation, in any instance, is the product of his total experience, including his life without the school as well as that within it. If, in this situation, the tensions conditioned by the teacher to bring about an experiencing of the study are extrinsic rewards and punishments peculiar to the school and having no value beyond it, the relations established between the child's previous experience and the ideal of the study are liable to have but little significance for the child's wider life of responsibility, in the interest of which the school exists. Since the interests without the school are largely intrinsic, the activities involving them are felt to be more closely identified with the life of the child to a degree that school studies with their extrinsic interests may seem to be something from his life apart. This partial dualism perhaps can never be wholly removed, but it should be minimized as much as possible. By its fruits in life as a whole is the school to be judged, and, if any activity belongs only to school situations and is no longer of use when a child has finished his school education, in the economy of nature whereby only that which is permanently useful remains, this school activity is fortunately forgotten. To measure the efficiency of the school in the light of this principle would certainly make startling revelations of its inadequacy in many instances as it is at present administered. When such inadequacy prevails, the pupil, having failed of guidance in the development of his life of responsibility, ceases to progress as he should, settles down in a narrow circle of habits forced upon him by his immediate environment and lives in the process of removing small tensions in his immediate surroundings rather than aggressively adjusting himself to a spiritual environment as wide as the experience of the race. This spiritual environment is potentially involved in whatever little experience he may have, and, in the light of it, the otherwise unimportant daily acts get their highest significance and

are raised above the plane of drudgery, which results from work when its higher ideal significance is not appreciated. Indeed, the only ultimate wealth or poverty is wealth or poverty in the realization of this richer experience. Since habits become unconscious, conscious life itself loses much of its intensity when only small new adjustments are being made, for the intensity of conscious life depends upon its progressive adjustments. Modern machinery and division of labor by simplifying adjustments has no small influence in deadening experience, when the school has not revealed a wider experience and given the individual a genuine and vigorous start in its realization. Indeed, not only should the school be more closely related to the home so that teachers may know more of the experience of their pupils, but it should become more the center of community life as a constant source of opportunity, inspiration and direction to those who have passed the so-called school age without having become independently successful in directing themselves to their highest realization.

At first, the pupil is capable of very little self direction. Simple forms of manual training are of special value here; for such tensions in the material environment, the bearer of the social purpose, which is in a sense common to both pupil and teacher, are easily made and understood. While manual training is sometimes considered to have its chief value in muscular coördination, it may become a most valuable medium for the normal development of knowledge through the creation of desired ends, ideas of more satisfactory adjustments, and the realization of logical processes in the interest of control, which constitutes formal discipline. The whole self-active process is here involved in a valuable way. Out of the present situation grows an ideal situation which, conceived in imagination, is felt by the pupil to be more satisfactory; a logical process, which, in seeking to remove the tension and secure harmony, draws upon other experience, builds hypothetical bridges to the desired situation and tries them at first in imagination; a final testing of the chosen hypotheses in actually realizing what is desired, whereby the hypotheses become facts. Judgments are the atoms out of which the world is built, and, in such a process, the pupil is in a very real sense creating his world and peopling

too, through his power to eject his experience into his ideas of other persons. Too much imitation perverts the process so as to seriously affect its value. Imitation enables one to take advantage of the product of another's experience without going through with the complete process. For objective effects, it is very valuable in giving both ideals and means of control, and determines most of our lives, but education can develop genuine knowledge only through the development of the process. As the appreciation of ideals is immediate, involving no process which can be objectified and analyzed, there is no opportunity for formal training here. The appreciation does not depend upon how the ideal is got, but upon its value. If a process is gone through with in getting the ideals, that is a process of control and not of appreciation; and, on the formal side, all processes of control are alike. To the extent that imitation controls manual training work, to that extent a factual knowledge corresponding to the learning of definitions from a book is got at the expense of the pupil's learning how to direct his own activities. Manual training is more valuable for beginners than book work, because a poverty of experience has not enriched the meanings of book symbols sufficiently to make them vital realities in the pupil's situation. Indeed, for this very reason, it is often true in secondary school work that boys and girls who are indifferent to mere book study manifest a lively interest in manual training to a degree that when these direct physical situations are connected with the book symbols, giving them a vital meaning, a vigorous interest may be developed in the latter. As the meaning of everything in the world involves the meaning of everything else, this interest may gradually be led to extend to reading matter which at first glimpse would seem to be wholly removed from the original source of interest. An attempt to force pupils to study books in which no interest is felt by them is apt to make a feeling of aversion an habitual attitude of mind in relation to books and school work generally to a degree that their student interests may be unnecessarily destroyed. The material handled in manual training is as truly symbolic as the words of the book, for the meaning of the thing is its relations, which are symbolized by what is sensed, so that every new relation discovered enriches the meaning of the latter.

Accordingly, daily activity with this material has given it very rich meanings that have become of vital interest through associations with the realization of ideals, with the better adjustment and consequent well-being of the self. Because of the fuller realization of this kind of experience in the life of the pupil, since the matter involved bears for him a richer content of social purpose, or meaning, it becomes a better medium for mutual understanding between pupil and teacher, as a consequence of which the teacher can make tensions more valuable for the pupil. Because of this better mutual understanding of the symbolic material, the pupil's ideals become clearer, his situations more vivid, his tensions more specific, his interests keener, his logical processes more definite and the testing of conclusions more accurate. Such conditions are of greatest value in developing the self-active process. There is a tendency to magnify the contrast between manual work and book work even to the point of dualism, where the so-called material and spiritual environments are considered to be fundamentally different. Analysis seems to indicate that no such dualism exists. A percept is a blur of sensation definitely distinguished and given a meaning by remembered past experiences with which it is associated. From habituation, the memory process immediately presents these past experiences so that they seem to be known in the sensation itself. Just as a composite photograph makes vivid the common and obscures variation, so here the strongly impressed composite out of many experiences is felt to be the thing directly perceived. Where the recall is not immediate or where a particular past experience comes clearly to mind, the failure to completely merge into the percept marks something remembered. Now, in words both spoken and written, the sense symbol of the so-called material experience has substituted for it the sense symbol of the word with which the relations involved in the "thing" are associated by memory. In so far as the associations exist, they are as valid in one case as in the other, the difference being that in the one case nature furnishes the symbol along with the experience, while in the other an arbitrary symbol is chosen, which may be copied after the natural symbol as in picture writing or the sound of a word. As various sensations, usually those of sight, hearing or touch, may separately sym-

bolize the same thing, so a word may be seen or heard or, as in the case of raised print for the blind, felt, each sensation meaning the same thing. There is this difference, however; one or more of the natural sense symbols is always present with the experience involving the "thing" and seldom or never without it, while of the various sensations of the arbitrary word symbol none may be present with the experience and all are usually used without it, so that, according to the law of habit, the association in the instance of the natural symbol becomes stronger than in the instance of the arbitrary one. If what is at first the natural symbol of a "thing" occurs without the experience associated with it, an illusion results. This may lead to a weakening of some associations whereby the symbol comes to stand for only that part of the original experience with which it always occurs. Indeed, this indicates how separate "things" are formed. (cf. pp. 45 ff.) It seems to be evident on introspection that there can be no idea without its sensation symbol, even though the sensation be due only to muscular tensions of the organs of speech when words are thought, or to still simpler muscular feelings in attention. The reason why an arbitrary symbol is used in preference to producing a natural one is that it can be easily created at will and presents the element of past experience in the meaning of the thing without the direct relation of the thing to the will as a dynamic factor in the environment and the consequences arising therefrom. Instead of there being a material adjustment and then a spiritual adjustment, every material adjustment has value and meaning only to the degree that it is spiritualized. Words generally are the most spiritualized phases of the so-called material environment and the adjustment to, or, in other words, the realization of their meaning is ultimately of the same practical consequence as any adjustment. The most theoretical studies of science, philosophy and religion have arisen from practical needs in the interest of control and are valuable to the degree that the understanding of them makes a better adjustment possible. A misunderstanding is apt to occur by looking upon the object of the percept as something separate and apart from the self to which the self must be adjusted, rather than as essentially a meaning which has grown out of the experience of the self. The sensation

symbol is a terminal objective aspect of experience in relation to the subjective aspect, but the adjustment is an adjustment not to a symbol but to a meaning, and this meaning is always spiritual. Matter exists for one only in the degree that it has meaning. The same form characterizes all experience, which consists of a present situation symbolically represented and existing for the individual only in so far as it has meaning, a more or less definite idea symbolically represented of a situation in which the adjustment is more harmonious, and the discovery and use of a means of control to realize this ideal. The student of ethics and the farmer, in accordance with the same formal process, both employ "material" symbols through the comprehension of the meaning of which they secure better adjustments, in both cases the process being divided into the securing of minor adjustments which must be made in the realization of the more remote ones, but the process of realizing each of the minor adjustments is formally the same as the whole process involving the widest and most remote adjustment. There is no dualism between ethical and scientific activity; for every adjustment involves both, one setting the worth of the end and the other the means of control for realizing it: there is a science in every ethical activity and an ethics in every scientific activity. By the use of arbitrary symbols as in language, situations can be built at will in the imagination. This is of great importance in learning, because it makes valuable types of racial experience possible which would not otherwise come into the life of the pupil; and, furthermore, it makes thinking possible. Thought is a bridge built in the imagination to the ideal, its material being the ideas of things as factors of control. If a dog or a cat put into a box is dissatisfied with its confinement, it will act in all sorts of ways, each act more or less seriously affecting the self, until by chance some movement may release it; this movement giving satisfaction tends to be associated thereafter with the situation "being in a box". A man confined in a prison and wishing to escape will merely imagine various acts and their consequences, his imagination being guided through association by generalizations and analogies until some act is found which in imagination seems to bring the desired situation as its consequence. This act is then realized. The man thus saves his

energy by realizing only the act most likely to prove successful; and, moreover, his imaginary acts, in the light of previous experiences, are limited to those more likely to be successful, for such are suggested by elements in the present situation which have also been elements in other situations to which he has learned the satisfactory responses. When his conclusions are not verified by the act, it is because he has taken a limited point of view, omitting some essential phases of the situation, or has imagined phases present which did not exist.

Reality is a differentiating unity. Words are arbitrary symbols in the interest of this differentiation, but everywhere the differentiation is one of meaning, whether the symbols be natural or arbitrary. A book is a part of the symbolic environment, which, under proper conditions, will bring about new differentiations in the experience of the pupil. What these proper conditions are should be the object of further analysis. Since the book learning process is essentially the same as the manual learning process, the latter may guide in the analysis of the former. The first essential in both is that the symbol must have some particular meaning that is significant in the new type of experience which the pupil is to get; in other words, the symbols are valuable only to the degree that they bear particular meanings. A symbol must have some meaning, else it cannot be in consciousness, but it may have a variety of meanings. The blur of bright color of a gold watch may mean to the child only something that gives a pleasant sensation and is to be reached for; to the machinist, a mechanism of springs and wheels; to the day laborer, the indicator of his hours of toil and rest; to the astronomer, his whole theory of the universe. This truth is elaborated in the doctrine of apperception. Since the words of a book are arbitrarily chosen, the greatest variation in meaning is possible. Too often to pupils, even in secondary schools, do many of the words of a book signify only certain sounds to be uttered or certain tensions of the vocal organs to be made; and, when more than this, they often fall far short of giving the meanings valuable in the type of experience which the book is intended to condition. If nature is the best psychologist, the method which nature uses to connect symbols and meanings should be taken advantage of in the use of arbitrary

symbols. The natural symbol occurs with the experience of its meanings; indeed, the symbol is differentiated with the meaning and both develop together in accordance with the laws of habit formation: thus it is that in a percept the two are so intimately related that the meaning apparently is directly seen in the symbol. Since art can only approximate nature by following its laws, the meaning of arbitrary symbols is less vivid than that of the natural ones. If the printed words "table", "hat" and "Charles" are pinned respectively on a table, a hat, and a boy with the name indicated, and the teacher prints on the board, "Charles put the hat on the table," having the boy perform the action when he discovers the meaning of the sentence, the method will correspond in some essential features with that of nature, especially if the activity involved is of vital interest to the pupil; i. e. identified in some way with his own satisfaction or well-being.[1] The whole philosophy of the successful teaching of language is involved in the development of symbol and meaning in the percept; and, while the result is always the final test of any method, the analysis of the percept is not only suggestive, but gives a criterion by which invented ways of teaching such matter may be judged. Since the concept, judgment and reasoning begin and end in a growing perception, the complete analysis of the percept involves the whole intellectual process and consequently the theory of knowledge. The illustration given above in regard to the teaching of reading points only to one of the most obvious principles, that of association. As the simpler experiences of such lessons grow into more complex, the same principle holds good; the meaning involved must be experienced in connection with the symbol. In the teaching of reading, the meaning is too often sacrificed for the less valuable artificialities of tone and inflection, thus making the less valuable associations the strong ones. The vocal expression should be developed in connection with the meaning rather than with printed words and punctuation points. Vocal expression finds its essential value in being the symbol of meanings and not the meaning of symbols. The teacher's work then, in a very important sense, is the translating of symbols

[1] The fact that natural symbols are grasped first as wholes and then differentiated, or analyzed, only in the realization of new purposes, has important implications opposed to the so-called "logical" methods of teaching. In learning to read or write, for instance, the pupil should begin with whole words rather than with syllables or letters.

into meanings and connecting with symbols the new meanings developed. Since the schools of to-day generally are overridden by symbolism, though not so much as formerly, this function of the teacher should be emphasized more than it is, from the first simple tasks of manual training to the most abstract thinking; for only in this way can a vocabulary be built up in which the symbolic words have vivid definite meanings and thus serve the purpose for which the institution of language came into existence.

A book is a symbolic record of meaning which someone has experienced and judged worthy to be perpetuated. In the study of a book, two processes must be distinguished, the process of the experience recorded in the book and the process of the pupil in re-experiencing this. The ideals in humanistic literature are appreciated immediately when the reader's previous experience enables him to understand it at all, and, consequently, are the fountain of their own interest. In the pupil's process, the humanistic book, however prominent its ideals, must always be regarded as a means of control in relation to some purpose in his own life, else he would not undertake to read it; but this purpose need not be very strong or the relation of the book to it very clearly defined. His end to which the book is subservient may be so general as to find pleasure or culture. When he once begins to read, the ideals of the book take possession of him; for, as in the case of the motives cited, humanistic studies require that ulterior purposes be forgotten and realized only through aiming at something else, the ideal in the study. Indeed, it is this absence in consciousness of adjustment beyond itself that gives a certain satisfaction to art. In teaching such literature, the effort of the teacher is to direct the pupil in building synthetically out of his past experience the meaning of the ideals presented in the book. While no absolute statement can be made, since the distinctions are of greater or less rather than of what is and is not, the experience recorded in the book and the student's experience as he reads it should give identical sources of interest so that the pupil need not be pointed to something beyond. In the degree that some end beyond is made prominent is the appreciation of the book interfered with. This may in part account for the fact that often the most dust-covered

books in an individual's library are those he read in "literature" courses in his former school days. Contrasted with the humanistic, the scientific aspect of a book is not an end in experience, but a means in relation to an end; and, accordingly, when scientific books are devoted to the control aspect without themselves giving ideals to vitalize the control process, the teacher should closely relate the thought of the book to the purpose of the pupil so as to give it vital significance. The importance of this can be seen in life without the school, where the book of science is not consulted, except when one desires to make a cake, repair an electric bell, carpet a room, vote on a political issue, or control his activity in some other way in accordance with a purpose which was formed before the book was selected. There is a self realization, a satisfaction, and consequent interest in the activity of acquiring knowledge, and this alone may be the goal of the scientist, but his problems arise primarily out of other human needs and gain their significance in the light of a social ideal to the realization of which this knowledge is a means. The mere knowing ideal lives upon the problems of a wider life and dies without them. Everyone has many problems which he has been unable to solve and the art of selecting reading matter of the scientific sort is to choose under the guidance of titles and indices of books those volumes or parts of volumes which promise to solve the problems already vital. When no problems in some work of science to be studied are vital to the pupil, the teacher should bring into the consciousness of the pupil ideals, vividly felt by the latter to be identified with his own well-being, the realization of which condition these problems. Thus is genuine interest developed through motivation. Science, furthermore, is realized through an intellectual process, some of the leading principles of which have already been pointed out. The process of control has a main problem which is analyzed into smaller ones that individually, for the time being, become the objects of study and the solution of these give the solution of the main problem. The finer the differentiation of problems, if the view-point be sufficiently wide, the more accurate is the solution, as it involves less opinion and more fact, until problems are reached the solutions of which have already become facts. In a book the scientific writer recounts only the

essential part of his experience in solving a problem, in an organized way, so that the subordinate problems are indicated in chapters and paragraphs. One cannot intelligently read a scientific book unless he has some idea of the problem it is to solve and realizes that problem to be in some degree vital in the realization of his own ideals: then he must understand the subordinate problems into which the main one is divided. Thus is he directed to a fuller understanding of the significance of the thoughts of the book so as to appreciate their relative importance. A book which claims to be science and cannot be analyzed in this way is not the complete record of any scientific experience, but factual, which means that elements of control value involved in various problems are given without reference to any particular problem. Lack of organization here is lack of relation to a particular problem and means that a very essential part of a scientific experience is neglected. An enormous amount of time and energy is wasted in school where "so many pages are assigned in advance" without this perspective, as the pupil, in consequence, regards a fact as a fact, often dwells upon those which are of little significance and gives insufficient attention to those which are of greatest importance. Again, there can be much economy in reading by skipping those subordinate problems the solution of which the reader understands and centering attention upon those which he has not yet solved. At the beginning, the pupil needs direction in how to study a book, and the first step in supplying this need is in the assignment of lessons. Instead of having assigned a certain number of pages to be read and the facts given thereon to be memorized, the pupil should, at the beginning with the assistance of the teacher, and, later on when the formal habit has been established, of his own initiative, get an idea of the general problem of the book and the minor problems into which it is divided. Then, in the solution of the main problem, each lesson has its own little hierarchy of problems, which should be appreciated. Control is through the solution of problems and a problem must be appreciated before its solution is attempted, else the pupil works to no intrinsic purpose in the study. Not only the method of studying a book, but also the method of the recitation should be guided by the general principles here presented, for a recitation

is only a study under the supervision of the teacher. It is desirable, as the pupil advances, to make accessible a wider variety of recorded experience by means of a library. Thus can problems more closely identified with his personal interests be dealt with and he can learn how to bring the experience of the race more fully into the realization of his own particular purposes. While at first book and page may be cited with advantage by the teacher, the pupil should gradually acquire that formal process of investigation which will make him independent in finding the information he desires, and thus self-directive in his activity. Useless mechanical difficulties in library work should be reduced to a minimum. A fault of teaching, which becomes conspicuous in such work, is a failure to have the pupil organize the results of his reading. In the first place, the reading should be for the purpose of solving some problem and this purpose should be a basis of selection in reading. No book may give a solution of the main problem of the pupil; but, when a division has been made into subordinate problems, the answers to these may be found. A mere fact, which has been stated (p. 48) to be an hypothesis which works, is, accordingly, the solution of some particular problem, which may be made an element of control in the solution of a larger problem. One's own problem, then, may be solved by reading the experience of others in the solution of different problems which, however, have some subordinate elements in common with his own. To pick out a number of facts without relation to some purpose of one's own is analogous to heaping up a pile of window frames, doors, bricks and other elements taken from various houses. They are mere debris unless again built into some useful structure. A fact as a fact is potentially valuable, for it may sometime be used; but, until it is used in the realization of some purpose, it has no real value. When library work is merely factual, it fails to develop those formal habits of purposive relationing which alone make reading of greatest value, for thus do facts become an essential part of the life of the reader. Control of experience, in the interest of which science has developed, requires constructiveness. This factor, which is the essence of self-direction in activity, is necessary to the efficiency of the pupil and yet is often neglected. The results of reading should

be worked out more artistically—indeed, more artistic work is needed in all activities of the school—and by artistic work is meant the copying of nature's process of learning by a close organization of material in the interest of some purpose with the elimination of all that is useless. Since meanings are relations, only thus can they be accurately conceived. In this age of hasty work, too many books are poor models of clean-cut, clear relationing. They are factual in giving material foreign to the purpose of the book and in failing to reveal those vital relationships in the logical process of development which prevent its elements from becoming disintegrated into mere facts. The critical organization of such books is good training for advanced students, but the books serve as poor studies and condition faulty mental habits in the less mature pupil. In training a colt for speed, he should be required to do his best for his distance: for the same formal reason, a pupil, to develop the highest mental efficiency, should form the habit of doing his best, of making his work the most artistic within the bounds of those limited purposes which his previous experience determines. Quality rather than quantity of work should be emphasized, and here, if anywhere, does the principle hold that if the little things are attended to, the great things will take care of themselves. Crude unfinished results in work, without clear and definite organization, may seem to the teacher who prizes factual knowledge to be a saving of time, but it does so at the expense of efficiency in thinking and consequently in the development of genuine knowledge. The ability to see a problem clearly and to use in controlling its solution only those elements which are vital to it is a rare virtue in every department of life and a virtue which it is the duty of the school to develop. So long as the school imposes such artificial conditions that the main purpose of the pupils is to pass, whether in recitation or more formal way, examinations that require factual memory rather than efficient thinking, so long will it develop the knowledge that has value in realizing this inferior purpose which the school has made vital to the pupil, but, so far as more valuable purposes are concerned, disintegrates into relatively useless facts and a consequent failure to know those vital meanings which are signified by the symbols standing for the facts and which must exist as experienced relations in the life process before they can be understood.

The so-called crowded curriculum is responsible in some degree for the artificial requirements and consequent inferior interests of the school. It should be remembered that a pupil's experience is always unitary, developing from a tension in his present situation to the realization of an ideal situation, and that the amount of experience which can be given in a limited time is limited. The curriculum makes a logical classification of phases of experience as a product rather than as a process and is for the purpose of better defining for the teacher the various phases of experience, or studies, to be developed. The finer tensions, problems and consequent intrinsic interests of a study must grow out of the broader ones; and, when a greater number of differentiations are mapped out in the curriculum than the time devoted to them will permit to be normally developed in the experience of the pupil, the inner organic relations are neglected and the contrast between these possible deeper relations and the superficial ones which take their place makes an overcrowded condition of the curriculum apparent. Superficial relations involve memorizing of the symbols of deeper ones without experiencing the full meaning symbolized; and, consequently, the inner organic connection with the source of intrinsic interest being neglected, the activity must be guided by interests extrinsic to the study. The ground is apparently covered; but, as in "cramming", those relations which constitute the valuable knowledge the curriculum intended are not realized in the life of the pupil. A fine sense of relative values, which is too often lacking, is here demanded both in the choice of the general curriculum and the great variety of often more important choices which must be made by the teacher in teaching it. The crowded condition may be relieved in three ways: viz., by decreasing the number of subjects studied, by decreasing the attempted differentiations within each subject and by a closer correlation of studies. To decrease the number of subjects or differentiations, there must be some criterion of choice. The worth of a study is determined categorically by the ideal which it serves. Divisions of subject matter are not absolute, but mere aspects of a unitary experience and are determined teleologically in accordance with problems arising in the service of the more valuable ideals of life's activity. Not pedantic stand-

ards belonging only to the school but the social ideals of what the pupil ought to do in life, limited, of course, by the pupil's instinctive tendencies and capabilities, are the ultimate guides for the teacher in determining the proper relative emphasis to be given among subjects or among differentiations within a subject. Nothing should be taught to the child simply because it is valuable, but because it is more valuable for him than anything else which the experiencing of it will preclude. The failure to sense a scale of relative values is the fundamental fault that permits an over-crowded curriculum. Furthermore, since the meaning of a thing is its relations, a lack of correlation brings poverty of meaning. One tension in a pupil's situation may involve the essential truths of several studies, one making the meaning of another clearer. Indeed, this is the natural way of development, for studies have developed out of a unitary experience, and were not at first separate and afterwards to be united. That different subjects should be taught at different times and out of relation to others is a fiction that has grown from the logical classification of the curriculum and leads to waste both in time and energy. Complete thought is synthetic as well as analytic, so that logical classification is the separation of phases of experience only in the service of their recombination in directing life's unitary activity; and, apart from their interrelations, they lose their true significance as well as their deepest intrinsic interest.

In the activity of the school generally, there is too little thinking of the nature demanded by the curriculum, another result of extrinsic interest. The constructive, synthetic aspect of thought, whereby facts are built into the living unity of the pupil's experience with such organic relations as make them truly significant, is conspicuously neglected. Too often are attempts made to work from the curriculum back to the experience of the pupil rather than from the present experience of the pupil to the realization of the curriculum, as when generalizations are given and then illustrated. This results in connecting the symbols of the curriculum with any extrinsic interests that happen to be active rather than finding first a genuine interest and developing it through the study. In preparing for recitations or examinations or for writing papers, pupils read or are

given information by the teacher before having worked over their own experience so as to develop appreciations and problems which would make the reading or lecture genuinely significant. The appreciation of ideals and the solution of problems for which the pupil has not been prepared are thus undertaken, and mere memory of symbols, with sometimes only enough meaning to differentiate them, takes the place of that genuine experiencing which is essential to real knowledge. That knowledge which is power is the product of much thinking and this thinking must be done by the pupil himself. He must live the process in order to learn. Interference on the part of the teacher is justifiable only when the pupil's activity takes a path of realization different from that intended by the curriculum and should be so directed as eventually to make such interference unnecessary. As knowledge is the product of the logical process, if proper habits of thinking are formed, the knowing will take care of itself. The teacher has done his perfect work when the pupil has acquired those norms of experience which enable him to continue his education during the remainder of his life, without purposive direction by others, when his self-activity on the basis of school experience, both concrete and formal, finds in the daily activities of life its own best realization.

CHAPTER XI

Summary

The fundamental thought which it has been the purpose of this dissertation to emphasize is that learning is an essential phase of conscious living and can be neither understood nor controlled without involving the whole life process. This life process, in so far as it is conscious, is essentially activity continuously directed to the realization of appreciated worths through the control of experience. In the consideration of historical typical theories of knowledge, an attempt has been made to show that the inadequacy of theories to solve the epistemological problem by revealing a criterion of truth or the educational problem by revealing the method whereby learning may be controlled, is due to abstracting from the conscious life process certain phases to the neglect of other phases which are data essential to the solution of the problem. The criterion of adequacy is consistency with all facts relating to the problem; and, since thought proceeds by the forming and testing of hypotheses, naturally the wider the view the more will conflicts annul untrue hypotheses and compel the thinker to devise others more satisfactory.

The problem of knowledge arose when tribal traditions once naïvely followed were found to conflict. The consciousness of this conflict precipitated the sophistic age of skepticism, the precondition of a better founded faith. In this conflict of tribal habits interfering with harmonious activity, Socrates and Plato attempted to discover some principle of harmony which would determine the right form of active expression and turned from the realm of conflicting tradition to seek this principle of harmony in the nature of the intellectual aspect of the self. Thus did they abstract the intellectual aspect of the self from active realization or the world of nature. Centering their attention upon the concepts, which mark an advanced stage in the knowing process, they failed to indicate how these concepts developed out of active life with its emotional and volitional as well as

intellectual aspects. While they found a formal principle of harmony in the universal character of truth as common to all knowers, they, in common with other intellectualists, neglected the fact that life is essentially activity, and, in solving problems in the interest of this activity, thought finds its basis of existence: by limiting thought to itself, they would direct consciousness to its own destruction. Aristotle was interested in life as a whole, including both the knowing self and nature, and, except for the occasional influence of the abstract point of view of his illustrious teachers, took a wider view-point, developing from it a doctrine with which much of modern theory is remarkably consistent. In the Middle Ages, during which time the church acting as authoritative dispenser of truth saved much of the ancient learning until a newer civilization could grow up to a comprehension of it, the problem of knowledge was not felt in a degree to cause much advance towards its solution. The religious dogma, however, affected the further development of the problem by making an acute separation of body and soul, mind and matter. When conflicting doctrines grew up in the church and the further conflicting learning of the East spread over Europe, opposing traditions again precipitated an age of skepticism making the problem of knowledge once more vital, and Descartes, as did Socrates and Plato many centuries before, turned from the active realization of the self, or nature, to the concept, an abstraction from it, in an attempt to find some principle of harmony. The dualism which religious dogma had created between mind and matter limited him to one aspect of reality so as to make it impossible for him to discover the relation between the general and particular of experience as phases of a unitary process. Accordingly, he abandoned what is most essential in the problem by concluding that the Divine Being mediates between mind and matter, a *doctrina ignorantiae*. Of the two terms of the dualism in one of which Descartes attempted to find a principle of reconciliation, Locke abstracted one and Leibniz the other as bases of further attempts to solve the problem of knowledge. Locke, centering his attention upon the world of nature, the product of active realizing of the self, made knowledge a mechanical construct the method of which he could not explain without the assumption of mental self-

activity and the intervention of God, the one foreign to his point of view and the other, as in the case of Descartes, a *doctrina ignorantiae.* Leibniz, centering his attention upon the mind, could connect what is known with the objects of knowledge only by the assumption of a harmony divinely preëstablished, the method of which is beyond human ken. Kant, attempting to harmonize the opposed views represented by Locke and Leibniz, centered his attention upon the intellectual aspect of experience and analyzed knowledge as a product: by neglecting self-activity or will, he accounted for the development of knowledge in a rather mechanical way as the result of the interaction of object and subject, when object and subject do not exist prior to knowledge. Furthermore, psychology, in so far as the explanation of knowledge is attempted on the basis of psycho-physical parallelism, neglects the will and emotions as factors of it and views knowledge as a mechanical construct. In each of these theories, then, in so far as abstraction is made, neglecting the emotions and will, there results a mechanical theory of knowledge, or a *doctrina ignorantiae*, or a combination of the two. As the Greek school of thought found its completest expression in the writings of Aristotle, in which activity is recognized to be most fundamental to the problem, so modern thought, after unsuccessful efforts to satisfactorily solve the problem from an intellectualistic basis, has returned to a voluntaristic position. The monistic voluntaristic theory takes into consideration the whole active process of social realization. It accounts for the differentiation of the individual out of a social plasm in the vicarious guiding of his activity through valuable forms of experience. There differentiates out of his activity a consciousness of a present situation conditioned by his realization through past experience, an ideal situation viewed to be more satisfactory, and an activity exercising control of means, directed by a logical process, in the realizing of this ideal. In this individual active process alone are the phases of intellect, emotion and volition essentially related so as to reveal their true meanings, which are these very relations. Here learning is revealed to be a phase of the wider life process; in truth, to be the self-conscious direction of this process. The function of the school, accordingly, as a social institution is to reproduce in the lives of pupils those

typical situations that condition the most valuable experiences through which individuals in the race have lived. The fundamental principle of the method of teaching is to reproduce the essential elements of these typical situations as they have been experienced independently of the school. As the work of education becomes more a rationalized endeavor, the school will less impose upon the pupil conditions peculiarly its own; for it realizes its true function and therefore finds salvation only when it loses itself in the service of a wider life and makes learning the repeating of the best types of self-conscious living.

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